PACKAGING CATALOG



1942

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Foreword

N PRESENTING to our readers this Fourteenth Edition of the PACKAGING CATALOG, we are pleased to note that it numbers over 630 pages — pleased because this substantial increase in size over the 1941 Catalog implies a corresponding increase in the amount of pertinent information available to those interested in the ever-expanding field of packaging.

Events have been happening so rapidly that a considerable number of important changes have already been made, and more are being made, in the many branches of industry that contribute to packaging. It is admittedly impossible for any individual — no matter how well he keeps abreast of current developments — to be equally familiar with all the branches and ramifications of the vast packaging industry. It is, however, most important for a person in any one phase of the business to have some knowledge of all the related branches, or to be able to find reliable information on other aspects of a problem in packaging, when and as he needs it.

It was with this need of an authentic, encyclopedic reference book in mind that this edition of the PACKAGING CATALOG was compiled. Every section has been carefully read for revisions by competent authorities on each subject. Many articles have been completely rewritten; all illustrative material has been brought up to date; and one new section — on Wood, Leatherette, and Pottery — has been added.

Attention is directed to the charts appearing in many of the sections, such as boxboard gage lists and uses; properties of rigid plastic sheeting materials; properties of wrapping materials; properties of molded plastics; labeling difficulties and corrections, etc.

Also, attention is called to articles treating of nomenclature and standardization and simplification in various branches of packaging.

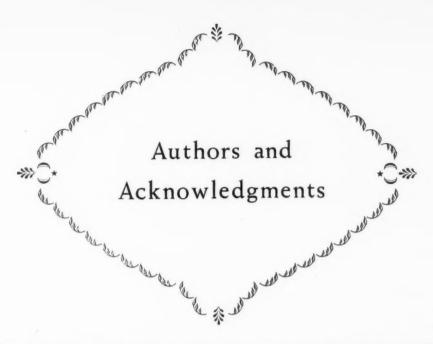
Important changes in any of the laws affecting packaging have been noted, but detailed information on Government rulings, priorities, and similar data is conspicuously absent. Everything pertaining to these matters is in such a state of flux — if not chaos — that anything we might prepare at the time of this writing would undoubtedly be obsolete by the time you read it, or even by the time it is going through the press. The recent successive issues of *Modern Packaging Magazine* have reported developments due to the national emergency, and through this medium we shall continue to relay important information as quickly as we can make it available.

In this way, we feel that we can give you even better service. By keeping your CATALOG perennially timely, it will be all the more valuable to you. We hope that you will keep it at hand, consult it often, and come to look on it as both a treasury of information and a trusted guide toward greater efficiency and ever better results in modern packaging.

Charles A. Breskin, Publisher

Editorial

Christopher W. Browne Pearl Hagens
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The Packaging Catalog naturally represents the work of many people. We have attempted to give formal recognition to those individuals and concerns who have aided in the preparation of this edition. To them and to the hundreds of others who have helped to make the 1942 Packaging Catalog more complete and more useful, we extend our sincerest thanks and trust they will find their reward in the quality and completeness of this volume.

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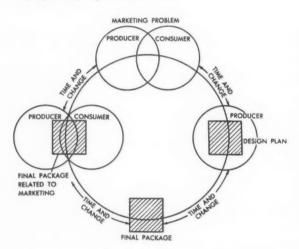
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Procedure in design

PACKAGE may combine art, engineering, and sales qualities, but in itself a package is not an endproduct. It is a vehicle, an expression of business judgment. Once the approach to design is made upon the basis that a package has no intrinsic value in itself, but becomes immediately of great worth only when related to producer-product-market, a true perspective of the place of design in the packaging field is obtained.

The producer of goods who starts with this approach to his problem of design finds that the various steps between the creation of his product and the purchase of it by the consumer fall neatly into a procedure that may be graphically represented thus:



It will be noted that the producer- (or manufacturer-) product-design are all affected by time and change. No package can remain static in a dynamic world. This does not mean that packages must be designed and redesigned to please every new passing whim of the consumer or simply because another year has passed. It does, however, mean that manufacturers must be alert to minor as well as to fundamental revolutionary changes.

For example, consider the changes that have taken place in some of the packages that were the last word about half a century ago. Packages for those products still sold today have been redesigned in keeping with present-day practices. Revolutionary changes have also taken place in labeling because of new laws which have drastically changed both design and copy. The supermarket has likewise had its effect upon labels and upon the constructions of the package itself. These and many other changes due to time and conditions must be considered before the draftsman or designer can put a pencil to a sheet of paper to draw a new package or attempt in anyway to improve upon an old one.

Step I: Marketing problem

The maker of anything to be sold to the general public is at once faced with a marketing problem. He has a product that he wants to get into consumers' hands. The beaten path to the door of the maker of better mouse-traps is a good story, but the manufacturer of today must have a package that the consumer is willing to buy and he must make it easy to find.

Before a manufacturer attempts to have his package designed or redesigned, he should do three things:

- 1) Clarify his problem.
- 2) Reduce product and package to essentials.
- 3) Convert problem into a plan with specifications.

In other words, the manufacturer must have a design made to solve a known problem. The check list (page 12) will serve, in part, to clarify the marketing problem and reduce product and package to essential elements. When the list has been checked, the resultant facts and conclusions will aid in planning a design with certain requisites so that the craftsman or developer can interpret them in terms of specifications and produce a good final package.

This list can be checked accurately only after considerable original research, or a careful analysis of the results of other studies from various sources. For instance, the habits, likes and prejudices of prospects in relation to the package cannot be known without a survey of consumer preferences. Shelf conditions for a new package can be known only after investigating the markets and shops.

Data from research on consumers, distribution, equipment, and materials are made available through a number of different agencies and channels, such as:

Manufacturers: Results of previous activities in the field. The sales force of any manufacturer is a good source of information about consumers, jobbers, and the like, since salesmen are on the firing line in regard to what the public likes or will buy. Also, it is the manufacturer himself who can best supply information on equipment right from sources within his own organization.

ADVERTISING AGENCIES: These agencies often possess the facilities and personnel for conducting various types of research. They also often have at hand pertinent information which may bear on a particular design.

FEDERAL AGENCIES: The Departments of Commerce, Agriculture, and Labor, and the Interstate Commerce Commission have available information from their research projects on distribution, market, and consumer.

DEPARTMENTS OF HOME ECONOMICS, SOCIOLOGY, ENGINEERING, in state-owned and private colleges are constantly conducting surveys of and investigations into consumer, distribution, market, materials, and other factors. These results are made available through their

own publications, their libraries, or heads of departments, in the institutions.

PRIVATE AND SEMI-PUBLIC AGENCIES: Inquiry into existing studies previously made in fields related to a particular marketing problem will reveal much vitally helpful information.

Step II: Plan of design

Facts and conclusions drawn from an analysis of surveys or study and other research on a product are interpreted in specifications which may be developed into the final package. Initial research on the designing procedure may have been conducted by the manufacturer himself, or the design departments of the suppliers; or the manufacturer may have employed the services of a professional industrial designer or agency. Whatever the method followed, it is usually at the stage of planning his design that the producer calls in an outside agency.

A professional industrial designer (working on a retainer or job-fee basis) or other agency employed to interpret specifications in design will proceed in the creation of a design somewhat as follows:

- Develop package of a design that follows data evolved from research into all problems having to do with sales promotion, study of equipment, materials, distribution, consumer market, etc.
- Develop rough sketches of proposed designs.Make finished sketches or models.
- 4) Work with suppliers of materials and processes.
- Make working drawings for packages.
 Supervise production of designs and do away with "bugs" which may develop along the line until the final package is approved.
- Aid in the establishment of the new package in relation to programs of advertising and promotion.

When the new design is completed—and before the package is introduced to the market—the final result should be analyzed and checked to assure its effectiveness. On pages 10 and 11 is a list of attributes essential to a successful package against which any design may be checked for final evaluation. Grade the new package on all questions and total the points in the rating column. Jot down possible improvements, changes, etc., in the "Notations" column. Then rate the package as follows:

Score	Rating
90 (or above) 80-90 65-80 65 (or below)	Design of package excellent Design of package above average Has weak points; improvements needed Definite need for revision

Step III: Relating final package to marketing

A new package ready for the market, or the redesign of an old one, is still in a formative stage. The package may have all its essential qualities, but they lack development under actual market conditions. It is often necessary to subject the package to:

 a) Pre-testing for marketability. There are various methods used for pre-testing packages, such as formulas, field sampling, consultation with experts. One or more of these methods may be

- found feasible. (See Testing Techniques, page 13.)
 b) Coordination with marketing activities. Its introduction should be linked with sales promotion, marketing program, and advertising campaign. Without proper coordination of all these, a new package may prove ineffectual.
- c) Tests for sales results.

The actual physical introduction of the package to the consumer means that a number of operations must be coordinated. How shall the new merchandise get into the stores? By several ways as follows:

- a) It may be introduced in all localities at the same time:
- b) Change in design may be made in stages in order not to interrupt the continuity of an established design; or the change may be done radically and played up heavily in the firm's advertising, display, etc.;
- The change may be made when dealers' stocks are high or when they are low.

It is not considered the wisest practice to clear stock of all old packages in the firm's storage rooms and follow immediately with shipments to dealers of the new package. Dealers will always try to sell the old packages first and since sales vary, the new design would have scattered introduction to the public. It is considered much better to attempt some equalization of minimum stock among all the firm's jobbers and dealers before presenting the new package. Then presentation will be widespread and made at approximately the same time.

Another method sometimes practiced is a kind of control set up by the manufacturer's salesmen. The salesman tries to limit each buyer on his list to less than his regular sales volume of old stock. Thus, it is exhausted at about the same time among all his clientele and he is ready to introduce the new package. The flaws in this method are fairly obvious. First, the salesman does not carry out his proper function of selling and, second, no allowance is made for any unusual sales in quantity or the misjudgment of the salesman. Such practice, too, tends to destroy good will between the firm and its clientele.

The exchange method of presenting new merchandise calls for swapping, as it were, the old merchandise for the new on a given date. Freight losses, damaged goods, re-packaging, and other costs make this unpopular.

If properly planned the introduction of a new package holds few pitfalls. With careful pre-testing, coordination and timing with marketing activities, and checking results of sales, the manufacturer can launch his package with confidence and the assurance that market returns will be satisfactorily profitable.

New materials and new techniques in packaging appear periodically and completely change the balance existing between available materials and techniques. Because of this, large groups of packagers find it necessary to reevaluate at intervals their entire packaging program from the design viewpoint. Periods of rapid change alternate with cycles of consolidation and simplification. However, the manufacturer who studies his problem carefully will find that he can create a line of packaged merchandise capable of winning consumer acceptance.

PACKAGE DESIGN

PAC	KAGI	E DESIGN
	CHARACTERISTICS	TEST
	Composition Attention Value	It should be dynamic in color and design. Simplest possible arrangement. Analyze details—lettering, words, photography, diagrams—for close-up view, for reading direction and perspective. Place your package at eye level at the approximate distance it is normally seen by the store patron. It is suggested that the distance be ten feet. Rate the package critically as you answer the questions on the right. It should be more conspicuous than others of its kind.
	Appropriateness	In considering the checking questions in this group, it will be helpful to get the benefit of other people's thinking in determining if your package is appropriate to the product. Copy and other matter should carry conviction and be strong enough to influence the judgment of the observer.
0.00	Competitive Comparisons	Assemble packages of similar products and set them up along side yours. Consider them first at a distance of ten feet and then take them individually in your hands to make these comparisons: 1. Group test—Look at the packages. Close your eyes momentarily and then reopen them. (See checking question number one.) 2. Group test—Long inspection. Determine your rating by comparing your package with the best in the group on each of the points listed. (See checking question number two.)
	Display Considerations	Make up a display of your packages as they often appear in the retail store. If possible, surround your package with various other packages of related items.
	Memory Factors	A good test to make in order to determine recall value is to hand your package to persons, not too closely familiar with it. After they have looked at it for about a minute, take it back and put it out of sight. Then ask the following questions: a. What do you remember first about the package? b. What are the product and brand names? c. Recall three important features of the package design. d. Is your interest aroused? The reactions to these questions will help you answer the opposite checking questions.

CHECKING CHART

CHECKING QUESTIONS		POINT RATING				NOTATIONS	
7.		Good	Fair	Below Average	Poor	Points	
	 Do you get a clear impression of the name of the product? Is the contrast in color scheme sufficient to stop the eye? Does the general arrangement have a dynamic quality that 	12 6	6 3	3 2	0		
	gives an aliveness to the design instead of an unexciting passiveness? 4. Does the layout arrangement help draw attention to the	4	2	1	0		
	important information or illustrative "spots"?	3	2	1	0		
_	Does your package make its strongest appeal to the type of people most likely to buy your product?	7	4	2	0		
	2. Is your package designed for the greatest merchandising	5	3	2	0		
	3. Does the package associate with your product that feature or those features which you are trying to stress, such as dainti-	5	3		U		
	ness, refinement, big value, exclusiveness, purity, strength, tastiness or some others?	5	3	2	0		
	4. Do the shape and size of your package make it easy for the retailer to handle and display?	3	2	1	0		
	5. Do shape and size give full consideration to handling in the home by the consumer?	3	2	1	0		
	6. Has the package design kept pace with the trend in your industry and related industries?	2	1	0	0		
	How does your package compare with the group in quick impression value? Does your package have—	7	4	2	0		
	a. Better name display?	6	3	2	0		
	b. Distinctive color combination?c. More pleasing shape?	3	2	1	0		
3	d. More interesting and appropriate design?e. Better suggestion of product quality?	2 2	1	0	0		
	f. Better illustrative possibilities in advertising?	2	1	0	0		
	Is the product identity emphasized by the mass display?	6	3	2	0		
	Does each package become part of a larger, pleasing design?	5	3	2	0		
	3. Does the design maintain its effectiveness when displayed						
	with other products?	4	2	1	0		
	Does your package have the necessary factors to aid consumers in remembering it, for example: 1. Does it have some device such as an illustration or distinctive typography to fix a memory association in the user's						
	mind? Example: Arm & Hammer Soda package with the		,		_		
	familiar Arm & Hammer illustration 2. Is the package easily identified and described as "Look	5	3	2	0		
1	for the big red letters on the box?" 3. If you produce several related items, does your package	3	2	1	0		
3	have the characteristics of family resemblance to aid in mer- chandising the entire line?	2	1	0	0		

CHECK LIST FOR DESIGNING A PACKAGE

1.	What is the nature of the product to be packaged?
	a) New product?————————————————————————————————————
2. 3.	How many uses has it? Where is it to be marketed? Will sectional (geographical) differences have important bearing upon product or package?
4. 5. 6.	Are there any special sales angles which will influence packaging? How much consideration does a consumer give to price when choosing product? Does sale of the product depend upon effective display?
7. 8. 9. 10. 11. 12.	Is the product superior to similar products on the market? In what way is it inferior or superior? Which makes the best appeal: Price? Particular sales angle? Superior product? What competitive brands already occupy the field? How are competitive products packaged? What is the strength of each? How is the product packaged at the plant? (It is well to have a comprehensive view of production at the time of
13. 14.	designing package. In the review of production of package, advantageous changes in production methods are often discovered.) What are the habits, likes, and prejudices of prospects in relation to the product? What are shelf conditions?
	a) Advantages b) Disadvantages
15.	Which does the retail trade prefer to display?
	a) The "lie-down" type of package? b) The "stand-up" type of package?
16.	How will the package be seen?
	 a) From a distance? b) At close range? c) Above the eye level? d) Below the eye level?
17. 18.	In what way does the size and type of package affect storeroom procedure? What consideration should be given to the construction of the package to withstand
	 a) Damage in handling? b) Damage in piling or stacking? c) Changes in climate? In temperatures? d) Insect infestation? (Other necessary protective measures?)
19. 20. 21.	What objectives should be sought in making changes in package? What type of package is the most efficient or economical? What objectionable features existing in similar packaged products should be eliminated?
	a) In their size b) Storing c) Display d) Put-up
22. 23.	Should change in package be made gradually or rapidly? Will a different shaped package
	a) Ship better? b) Stack to better advantage on retailer's shelf? c) Stand out better against competitors' packages?
	In what way can redesigning the package make savings possible? Will the package be subject
	a) To casual observation? b) To continual observation? c) To close-up study?
26. 27.	What feature is there about the product or service that will interest buyers? Can the package visualize the product to tell the buyer what he or she wants to know without the need of questioning the sales clerk?
28. 29. 30.	Can the package be so designed that the consumer has no difficulty getting at the contents? To what extent can the package make the consumer part of the purchase?
31.	Is the design one which can be adapted to other materials if necessary? Can the package be designed to promote profitable sales?
32. 33.	How may sales be increased through an improved package? How much money can be spent on packaging?
34. 35.	Will the package have pre-selling through advertising or must it do its own selling at the point of sale? How easily can tie-ups be made with it in display-advertising campaigns? What, if any, are the particular manufacturing problems in regard to product and its package?
36.	How does, and will, time and changed conditions affect the product, its use, and the package?

Design testing techniques

IECHNIQUES for testing packages may be divided into two general classifications: first, techniques for testing the actual physical characteristics of packages; second, those for discovering the public's response to a packaged product. The former techniques have definite standards by which a package can be accurately measured; but methods for the latter, because they deal with human reactions, have not been universally accepted and they can not be said to have established any wholly satisfactory unit of measurement for testing.

Testing for physical characteristics

Physical characteristics are tested in laboratories equipped with scientific facilities and manned by technicians whose job it is to know standards for all kinds of materials, the correct construction for different types of packages, varying potentials, etc. They check a particular package against known standards for strength, durability, resistance to moisture and heat, and other qualities which may apply to a particular container.

The work of these experts is tedious, but the results are mathematically correct. For example, a manufacturer can find out if his corrugated carton will withstand rough handling and long shipments by laboratory pretesting. Again, scientific tests will reveal whether or not the clear glass container he has chosen will prove a suitable housing for his particular product. Such physical tests are employed by the manufacturer not only at the initiation of a package, but also periodically as a check against his suppliers. This does not imply any distrust on the part of the manufacturer in regard to his supplier. Rather, it is a service which the manufacturer offers. It is far better to discover through laboratory tests that a material is defective but that the defect may be corrected before any real harm is done, than it is to have whole shipments returned after dealers and public discover the imperfection for themselves.

Testing consumer response

In sharp contrast to the scientific accuracy of physical tests are the methods of testing for response in consumersales. General techniques do exist, but these are not always applicable to the package in hand. It is often found that each package presents a problem all its own—certain characteristics falling into line with discoveries made through previous testing, but others being peculiar to that one package.

Neither manufacturers nor industrial designers are fully equipped as yet to carry on exhaustive studies on any single package or even a small selected group of packages. The necessary research is usually too expensive and disproportionate to results obtained—rather

like building a barn to shelter a mouse. However, testing has progressed from year to year through the combined efforts of manufacturers, industrial designers, advertising agencies, and research and testing laboratories of one kind or another. There have been few changes in the basic categorical techniques employed and the results have been cumulative rather than new.

These cumulative elements tend to indicate certain constants in public likes and dislikes, and a willingness to buy one thing in favor of another. They also point to present and future trends to establish to a degree the necessary requirements for packaging in many different fields, such as food, cosmetics and jewelry. Tests are valuable to discover whether or not a package has attributes considered essential, and carrying a test through to completion often opens up to the manufacturer entirely new and profitable fields for the development of his packaged products.

The basic techniques of design testing may be divided into three provinces: 1) Formula; 2) Clinic; and 3) Consumer Field.

Test by formula

A design-testing formula might be stated simply as

$$x \pm y = p$$

in which x means the properties of the package, y the characteristics that should be added or subtracted from the package, and p the ideal package.

Formulas are derived from various sources and from the correlation of related facts. They are based upon the previous experience of manufacturers, designers, laboratory and other scientific workers. These formulas do not represent actual, immediate consumer reactions, but are results of theoretical and scientific investigation. Testing by formula, for instance, might be applied very readily in judging the relative merits of packages for children. A vast number of data are available on children's reactions to packaged products. The subject matter may be broken down into seven divisions, based on children's:

- 1) Choice of color
- 2) Choice of illustrations
- 2) Memories
- 4) Abilities to grasp, lift and manipulate at different age levels
- 5) Vocabularies
- 6) Reading ability at various age levels
- 7) Ability to learn new words

The value of using a test upon a package for children may be appreciated at once from a brief examination of a few packaged products designed for children six or seven years of age. Although studies have long existed of the vocabularies possessed by the average child at this age level, fully half the words used in the copy on such packages is not within the child's normal range. With few exceptions copy could be written which would be within

his knowledge and understanding.

Thus, the first check upon the design for a package would be for copy. The test is made by checking copy against any of the lists of words compiled by educators. The Institute for Child Development at Columbia University is a source of not only such lists, but also other important testing data. Choice of color for the contemplated package should be made from among children's own preferences, based upon color charts like those found in *Children's Preferences for Colors* (Gale). Other charts will give accurate information about the child's ability to read and to remember a trademark, a brand or other identification for a product, his ability to handle a particular package, etc.

A package for children, pre-tested by a formula based upon previously tabulated and charted experiments with many different groups of children, is more likely to be a package that children will want and will encourage their parents to buy, than one that has been designed without any pre-checking against the known qualities that

children look for in a package.

Many of the formulas used by designers and manufacturers have been derived from widely different premises. One such formula, decidedly experimental, is based on the dynamics of composition. In other words, the design of a package, viewed as an activating object, must be strong enough to make people buy it. Simply put, a package must:

1) Have attention value

2) Arouse interest—compel people to give it more than a mere glance

3) Have retentive value, that is, create a memory pattern in the beholder

4) Please beholder

5) Influence the judgment of the prospective buyer.

Another system of pre-testing is based upon the results of psychological studies and experiments. Motivations and compulsions related to ownership, food, self adornment, etc., in both individuals and groups have been analyzed, and compiled into lists of the essential characteristics of a design that will induce people to buy a package which they have seen.

Tests by formula are by no means conclusive and most of them are still in the experimental stage. In the packaging field as yet they have had only dubious acceptance.

Test by clinic

Clinical testing operates in much the manner of a medical clinic in that experts and their associates in allied fields examine a package thoroughly and give their opinions of the design. The consultants are usually employes of the manufacturer—who are considered specialists in their various lines—selected groups of dealers (sometimes also suppliers), and a number of people who might conceivably represent a fair cross-section of consumers. Each

representative either approves or disapproves the design from his particular viewpoint. If most of them agree that a design is good, it is assumed that the package has a reasonable chance of good results in sales.

Since this method of testing is based primarily upon the opinions of people within an organization, it is valuable for unifying interest in a new or a redesigned package, and in the effort to promote sales. On the other hand, as a technique it lacks the injection of sufficient fresh and impersonal judgment to warrant absolute reliance upon the results obtained. Too often inside opinion is based upon what the manufacturer thinks the public should buy rather than what it wants or is willing to buy. Personal bias does not make for accurate testing.

Test by consumer field

Of all pre-testing techniques that of sampling the consumer field is perhaps the most widely used and is considered the most conclusive in information obtained. By this method, the package is actually introduced to consumers and their reactions to it are noted. Manufacturers frequently employ this method in order to create the basis for an important advertising campaign.

The test is conducted in survey fashion either by the manufacturer or by a research or advertising agency. A cross-section of consumers is established usually upon ABCD income groupings and areas are marked off in some city or several cities. Questionnaires are given to field workers. These workers are usually skilled in consumer testing and, armed with questionnaires (prepared in advance), they proceed to canvass the particular areas assigned to them. As soon as sufficient questionnaires have been filled out, the results are tabulated and the conclusions drawn.

A survey or field test was conducted, for example, on package closures. Approximately 1,000 women in 11 cities were interviewed. They were asked to name products whose closures they particularly disliked. It was found that housewives disliked certain types of corks, anchor tops and cans with keys. Number 1 on the list was the top that bent when pried off and would not go back on easily and tightly. A paper box that had no sanitary closure was also high on the list of unpopularity. Drippy containers for syrup and honey also drew many complaints from disgruntled housewives.

As a result of these tests, three firms re-designed their closures. One company added a spout to its fibre container and another a punch-in type of lid easily opened and satisfactorily closed for storage. Another replaced a cap formerly used with a plastic screw cap. One firm reported increased sales almost immediately after the introduction of a new closure.

The chief difficulty in field sampling is that actual market conditions are not always reproduced. The consumer is asked to give opinions on the design of a package that is isolated from the real conditions under which the packaged product will be or is being sold. Consequently, the opinions of consumers do not necessarily represent their reactions to the same product in a store.

Merchandising considerations

by W. F. Deveneau

N contrast to distribution, which relates to the physical movement of goods from the point of origin to the point of consumption, merchandising is concerned with the mental efforts which insure the regular and profitable flow of goods from manufacturers through the various distributive channels into the hands of ultimate consumers. While the manufacturer maintains an overall interest and plans the progressive merchandising activities of his product in all its travels, each of his jobbers, retailers and final purchasers has a limited interest in the product which must be fully met to make the entire process successful.

The manufacturer of consumer goods is not restricted to any one form of packaging; he has, in fact, four distinct and successful types readily available:

- (1) Shipping containers: corrugated, fibre, and wooden cases, are obviously of primary interest to jobbers or wholesalers and very large retailers.
- (2) Multi-unit containers: paper wraps and bands, set-up and folding paper boxes, which divide the larger quantities into convenient units for retailers without repackaging by the wholesaler.
- (3) Multi-unit display containers: for counter display in the retail store, acting as silent salesmen, saving the retailers time and effort.
- (4) Individual-unit packages: which encourage consumers to buy on sight and take them home.

Since the function of the jobber or wholesaler is to make a profit and build a substantial sales volume by buying in relatively large quantities and selling to retailers in smaller units, his primary interest in a manufacturer's packaging will largely center around:

Shipping containers: that

Adequately protect the product;

Readily identify the product by name, size, style, color, weight or contents and number of units, and thus simplify inventory control and record keeping; Are easily handled by truckmen and warehousemen and are prac ical for ordinary methods of storage.

Multi-unit containers: that

May be shipped to retailers with a minimum of time, effort and expense for counting and repackaging; Are representative of items that the majority of re-

Are representative of items that the majority of tailers will customarily buy one at a time;

Tell at a glance what and how many items comprise the unit.

Multi-unit display containers: that

Can be handled without fear of breakage or marring under ordinary circumstances;

Are sufficiently attractive to enable the jobber salesman to sell the unit to the retailer in a minimum of time and effort;

Will do a profitable selling job for the retailer so that he will re-order the item in increasing numbers.

Difference in motives

While the functions of the retailer somewhat parallel those of the jobber, except on a much smaller scale, there is one fundamental difference between the retailer and his customer, namely, the buying motive involved. When the retailer buys a product he does so primarily to make a financial profit on resale; whereas when the consumer buys that product it is to satisfy some human desire through possession and use. Operating in a limited area and making small profits on many sales, the retailer must accurately determine the needs and desires of his customers and satisfy them in order to remain in business. His interest in a manufacturer's packaging will therefore be primarily concerned with those forms that encourage the consumer to stop, look, handle, and otherwise examine the product, and bring herself to the buying point-namely, multi-unit display containers and attractive individual unit packages.

The ultimate consumer has hundreds of human desires, all of which she seeks to satisfy within the financial means available. Beginning with appetite, which activates the purchase of all food items, these desires run the gamut of human experience, the principal ones being: for health, to avoid effort, to protect loved ones, to win approbation, to emulate persons in more favored social positions, for comfort, for enjoyment, to be in style, the joy of possessing beautiful things, for pride, etc., etc. Thus in buying the products she does, the average consumer seeks to satisfy these desires and responds most quickly to packages that demonstrate and prove to her how possession and use will benefit her. She is blithely unaware of, and disinterested in, shipping and multiunit containers, but if the display containers and individual unit packages are designed to show her what the products within will do for her, she does not hesitate to stop and examine them, and if the satisfaction promised meets her approval, she quickly buys on the impulse.

A ten-point check list

Competition in all lines of products has made it important for all three classes—jobbers, retailer, consumer—to be conversant with all kinds of packages that have a bearing on the profitable sale and successful use of a product; therefore, their interests overlap to some extent in most of these ten major factors which consumer-product manufacturers have found it advisable and profitable to consider in the development of their packaging programs.

1. **Protection:** The primary purpose of a package is to insure the safe delivery of the product from its point of manufacture, to the home of the ultimate consumer, in the same fresh, attractive manner as when it was first made. Since much of the danger of breakage, marring,

soiling or otherwise destroying its original attractiveness comes from handling, the package must be planned to withstand these hazards.

- Visibility: In these days of super-markets with their emphasis on open displays, cash-and-carry, and self-service features, there is more necessity than ever before for packages to be plainly visible, because out-ofsight means plainly out-of-mind, whereas profits are still made on the packages that customers can see and buy. In striving for visibility many manufacturers have foolishly resorted to color schemes for their packages which are so loud and distasteful to the potential consumer that they actually drive her away from the product. Visibility does not necessarily mean grotesque color schemes or design treatment. Many a plain package has outshone its garishly adorned competitors by utilizing simple pastel colorings with good contrasts and legible typography, which give its product the character and quality that immediately attract consumers. Sound research on product and consumer will soon determine the one best color scheme that is entirely appropriate to make any given package readily visible and attractive to the largest possible proportion of its market. While in some cases it is a distinct advantage to make the product visible in its package, this is by no means universally true. This point deserves careful study, to weigh its advantages and disadvantages before making a final decision, and accept-
- 3. Accessibility: Since consumers like to see, feel and handle the products in which they are interested, before purchasing them, the manufacturer will benefit by making provision for such examination, without danger of marring the good appearance and orderliness of the original package. Even after it is purchased, accessibility of the product in its package is important to the consumer, contributing to her enjoyment and use of it with a minimum of effort on her part. If the entire contents of the package are not ordinarily used at one time, some simple means of re-closing the package neatly and securely is necessary to protect the product, build goodwill and assure future purchases.
- 4. Informativeness: One certain indication of women's independence is their insistence on making their own buying decisions, unaided by any retail clerk. And as time goes on they are showing more and more clearly that they wish the products they buy to be in packages that carry honest, understandable information. Technical terms as well as meaningless generalities prevent consumers from making intelligent buying decisions and, therefore, have no place on successful modern packages. True informativeness calls for simple facts about the product, what it is made of, what it will do, all the ways of using it, and the maker's guarantee—all to help the consumer buy knowingly, willingly and intelligently.
- 5. Forcefulness: The quality a package possesses not alone to make itself seen, but to sell itself on sight. In most cases this can be done most effectively by attractively portraying in word and picture the benefits the consumer will enjoy through possession and use of the product, or, conversely, what each day's delay in buying and using the product will cost in loss of ready satisfaction. Particularly with products sold in self-service stores, the package must do its full share in the job of pleasantly inducing the consumer to buy on sight. A common mistake is to use loud designs and colors so that the package is almost literally shoved into the consumer's mind and consciousness. More effective is the use of illustrations that readily appeal to the consumer's own selfish interests, and disarming understatements so easily believed that the consumer cannot resist.

- 6. Practicability: Seasonal or special-occasion merchandise may be marketed in novelty packages requiring manual set-up, great care in handling and shipping and special places for display. However, most of the products, sold every day of the year by practical business men, need packages that are practical for setting up, for storage, for shipping, for display, and for use by the ultimate consumer. Spending a little time and effort to make sure that a proposed package meets the very practical requirements prevailing in the manufacturer's own plant, in the jobber's establishment, the retail store, and the home of the consumer, will pay dividends.
- 7. Display: The entire strategy of modern merchandising centers around bringing products to the favorable attention of prospects who can profitably use them and have the money to buy them. No better means is available than to present a product through its package, and nowhere can the buying impulse be more profitably aroused than in the retail store where the action of buying can immediately follow stimulation of the desire to own and use a product. The retailer welcomes good display qualities in a package not only because they enhance the appearance of his store, but also produce quick and profitable sales with a minimum of effort and expense on his part. The consumer welcomes such packages because they keep her informed of desirable products that contribute to making her life easier, pleasanter, and altogether more satisfactory. In striving for display value be sure that the package does something more positive than simply make itself seen. Study the product in terms of the consumer's needs and desires and then deliberately design the package so that by a combination of words and pictures it will immediately demonstrate to the consumer why she should buy it in terms of the real service the product will bring to her. The display of the package will then prove profitable, acting as an intelligent silent salesman.
- 8. Advertising: Many manufacturers are missing golden sales opportunities by not taking full advantage of the values available in their packages as powerful advertising media in their own right. Packages are seen by thousands and thousands of consumers every day, who are perfectly willing to exchange their dollars for products which meet their needs and satisfy their desires. It is certainly poor judgment to spend little or no effort on packages which with due planning can be made to perform profitable advertising jobs. Since making consumers conscious of his package is an important part of a manufacturer's complete selling job, certainly the package should be so designed that it can be given prominent display in all forms of advertising used, be it in magazines, newspapers, trade papers or direct mail.
- 9. Packing: No package can be considered entirely successful unless in designing it due consideration has been given to modern factory operations. Even though in its introductory stages a package must be assembled entirely by hand, provision should be made for the later period when volume will require the economies possible only with high-speed, fully automatic packaging machines. Any experienced supply dealer will gladly furnish definite help of this kind and, in addition, the engineering services of the large makers of packaging machinery are available to assist manufacturers in designing packages that will be altogether practical, and make the transition from hand to machine packing with a minimum of trouble and expense.
- 10. **Economy:** In seeking economy in packaging the experienced manufacturer knows that there are many factors of greater importance than merely the lowest possible price at which his package may be purchased.

True economy in packaging comprises, in addition to a wise utilization of available materials, a careful study of all the processes and costs involved in putting the product into the package in the manufacturer's own plant, safe transportation for it, effective display and all the other factors appropriate to the individual product, such as its price, its degree of acceptance by its market, its competition and the merchandising job required to sell it profitably.

These ten factors are equally vital in the production of a satisfactory and profitable modern package. To the manufacturer whose package has been in use for a number of years they may serve as valuable criteria by which he may judge its all-round effectiveness, and possibly find ways in which it may be improved. To the manufacturer who is redesigning an obsolete package, or bringing out an entirely new product in a new package, following the ten points as set forth above will insure his avoiding costly errors and, with reasonably good promotion, bring him the maximum of returns on his package investment.

Successful and profitable packages don't "just happen." They are developed by giving due consideration to the individual requirements of the wholesaler, the retailer and the ultimate consumer who, working together, can bring success and profits to any product that fulfills human needs. The manufacturer who plans his merchandising with these cooperative efforts in mind may reasonably expect satisfactory results.

Production considerations

by H. F. Brownell

T is not possible to stress too strongly the necessity of considering production requirements in the preparation of any package. Too often the main consideration is given to appearance without thinking of such important features as how the package is to be handled along the production lines. Too often it is discovered that extra costs have been incurred which could have been prevented by making some minor change in the structure or design of some detail of the package.

To be specific, take the case of a circular label. Since the type goes across this in a straight line, to make a presentable package it must be placed on the bottle in the proper position. It can readily be seen that unless there is some means of holding this label in its box, a machine may put the label on the bottle in any position whatever, and that extra inspection and hand work would be necessary to assure proper registering of the type. Consequently, it is well to consider these matters ahead of time so that when the package is put through the plant for the first time minimum changes will be required. Usually, these changes in structure or design can be accomplished without detracting from the appearance of the package.

Type and storageability of raw materials

In order to obtain a smooth run in production it is necessary to have adequate supplies to feed the assembly lines. These supplies have to be brought in ahead of time and they represent storage requirements. All industries wish to keep this at a minimum, and it is highly desirable to choose that type of supply which occupies the least amount of floor space. For example, set-up boxes are not so desirable as the collapsible type, telescope containers occupy less room than others, etc. All supplies should be stored as near as possible to the place of assembly so as to avoid unnecessary delay and the extra work required to move these supplies from place to place.

In some industries containers must be bought from one concern, a special type of packing material from another, and corrugated cases from a third, each of which requires a certain volume of space. It is much better if all these items can be obtained from one source of supply, as in the bottle industry, for instance, where the bottles are shipped with packing, ready for final distribution.

Objects of production

- 1. To assemble in the most efficient manner possible:
- (a) Space is at a premium in most factories and a package should be produced in the least possible amount of floor space.
- (b) Any good production man wants as many units as possible pouring each hour out of a given line.(c) All supplies should be immediately available
- when needed.

 (d) Supplies should be on the same floor with the
- assembly or accessible with a minimum amount of handling.

 (e) Every production man's dream is straight-line production. This does not necessarily mean starting at one end of the room and finishing at the other.
- production. This does not necessarily mean starting at one end of the room and finishing at the other, but it does mean the minimum amount of handling and breaks in the line. Production can be in "L" shape or "U" shape and still be straight-line production as long as breaks or bottlenecks are avoided.
- 2. To produce at the lowest possible cost:
 - (a) The production man's basic thought is to be able to assemble a particular package with the least possible amount of labor.
 - (b) Waste should be reduced to the minimum.
 (c) Just as important as an even flow of raw material to the packaging lines, is the smooth disposal of finished goods coming from that line. This can be done by chutes or skids on platform trucks, etc.
- 3. To anticipate future ways of handling the package:
 - (a) One never knows just what the result in sales will be when a familiar package is changed or re-

placed by a new one. The production man is mindful of this and in his first planning tries to think of what would be necessary to produce his package should the sales double or triple over the present demand. Such an increase involves extra floor space and equipment, and for increased production on a certain package the original equipment may not be adequate. If and when it is possible to anticipate this, both money and equipment may be saved.

A production man's bill of specifications

Whenever a new package is created and production is being considered, the production man naturally breaks this package down into its component parts and makes a study of each to see how it will go through his line and whether additional machinery will be required.

Choice of container: Of all the components of a package, the container represents the starting point and the one point about which all others revolve, so it is extremely important to consider this well and choose the proper one. The following factors are of primary importance to production:

(a) No part of the container should be deceptive in

appearance.
(b) It should be the proper size and shape from the

consumer's point of view.

(c) It should be of the proper size and shape to move freely along the conveyor.

(d) It should not pile up or jam anywhere along

the production lines

- It should be able to go around curves or be pushed without breaking, chipping or mechanical
- The opening should be large enough for ease of filling.
- The opening should be convenient for removal of the contents
- (h) It should have the proper label space available. It should be constructed sturdily to withstand traffic conditions and be free from breakable parts.
- It should have no feature which would prevent its being assembled by a fully automatic machine.

Choice of label: When a production man sees a label he studies it carefully in its relation to the rest of the package and with the following thoughts in mind:

(a) Oddly shaped or freakish labels should be avoided.

(b) The label should fit properly into the label space on the container.

The back of the label should be of such quality that it will adhere properly to the container

(d) Consideration of a label implies also the adhesive used with it, because the preparation has to be stored in hot places, cold places, damp places and dry places and it is not unusual for certain types of adhesive to crystallize or become damp and so allow the label to come away from the package. Different types of adhesive are required for different types of supplies; the same type cannot be used for a tin can as for glass, for a varnished surface or for sealing corrugated cases.

(e) It must be possible to apply it by machinery.

Choice of closure: The following requirements come into a production man's mind:

(a) The closure should fit the container properly.

(b) It should make a tight seal, effective over a long period of time.

(c) The re-sealing features should be satisfactory

from a consumer's point of view.
(d) The liner should be of such quality as to withstand deterioration.

The liner should not contaminate the product in the container.

There should be no feature of the closure which would prevent its being applied and tightened by the usual type of closure machine.

Choice of carton and wrapping material: The following details must be carefully worked out:

The carton itself should not be deceptive in size but should fit the container it holds.

(b) The carton should be sufficiently heavy to withstand abuse in traffic.

(c) All details of construction of the carton should be such that it can be run on the available cartoning machines.

(d) The package should be of proper shape and construction to permit wrapping by machinery.
(e) Wrapping material should be of the correct

type and weight for the purpose.

(f) The right type of adhesive or sealing mechanism should be available for the wrapping material.

Choice of packing material: (a) Packing materials should be selected of the proper quality and type to protect the package on its journey to the ultimate

(b) The finished package should comply with all Interstate Commerce Commission regulations.

Machinery

When considering a new package, the production man must visualize the assembly in the factory, giving close attention to the machinery involved.

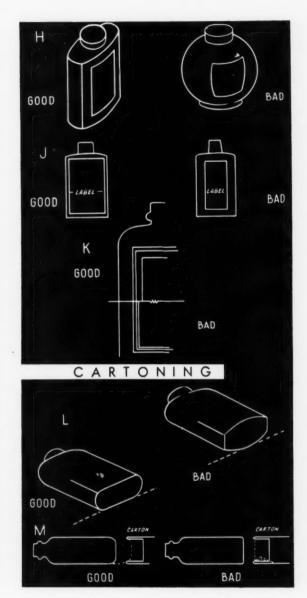
If there are any lines of machinery in the factory which are not employed to their full capacity, the details of construction of this new package should, if possible, be adjusted to the use of this line of equipment. If there are details of the new package that the old line cannot handle, additional equipment must be available for that phase of the work.

Practically all sales start small and then expandsometimes very rapidly-so when the machinery is being considered for the production of any package, it is important to get some idea from the sales department as to future requirements. If there are certain periods of the year when the package may have greater sales than at other times, this calls for peak production. The machinery to be installed, therefore, should be of that extra required capacity; otherwise, great inconvenience and extra expense will be experienced in the production of the additional units.

The matter is complicated by the fact that so many of the machine tool people who formerly furnished their machines for general industries are now very busy with government work and deliveries are delayed six months to a year. Further, the shortage of metals in the industry delays manufacture of whole machines and many parts.

The purchase of additional machinery should be considered on the following two points:





Good and bad elements in design considered from a production viewpoint. A. Bottles cannot tip. B. Single point of contact causes breakage. C. High single point of contact causes tipping. D. Oval shapes tend to turn and wedge; rectangulars or rounds do not. E-F-G. Good design avoids necessity for hand-locating of packages prior to labeling. H. A simple curve presents no labeling trouble; a compound curve offers great difficulties. J-K. Label should be easy to spot and slight variations should not be noticeable. L. A flat non-rockable side is desirable. M. A good radius on the container base helps it to slide easily and smoothly over the carton edge.

(a) Tools and equipment are absolutely required to produce some articles of commerce. The manufacture of tablets or pills, or the moulding of suppositories is no longer done by hand. The greater speed of production obtained from machines is required to meet the sales demand. The manufacture of many other things would progress very slowly if the operations were done by hand.

(b) Considering factory costs—that is, how much will be saved—studies should be made to determine

the output of a machine. Management should know the exact cost of making each unit or thousand units by hand and then, if the volume is sufficiently large, it is in a position to state whether the expense of buying the equipment will be offset by labor savings. Some businesses feel that if a piece of equipment will pay for itself in labor savings in two years, its purchase is justified. Others feel that the machine should pay for itself through such savings in a shorter time than this.

T HAS been stated that between 75 and 90 per cent of the total cost of moving goods from place of production to the consumer goes into the cost of container, packing, storage and handling, and the rest into transportation. How to improve the packing, handling, transport and distribution of commodities is, therefore, a matter of primary importance to all manufacturers.

Since most manufactured products require some form of package or container, the best method of packing and the best type of package for a particular product constitute one of the fundamentals of economical and efficient

distribution and merchandising.

In the selection of containers for the shipping of almost any commodity, there are two principal factors to be considered. First, there is the specific requirement of procuring an inexpensive yet adequate container which will insure the protection and safe delivery of the product. With this objective attained, some manufacturers are content to stop. From the consumer's point of view, however, there is the further problem of the best dimensions, sizes and capacities, the most easily handled types of containers, and satisfactory units to be considered.

Many nationally known companies have gone into packaging problems very thoroughly and employ competent men to study this important phase of their production cycle. They realize that if the packing room is the bottleneck of their plant it may affect their entire business. Those that are fully aware of the true situation now make specifications for container and packing an integral part of their production orders, to assure themselves that their product will arrive safely, and thereby prevent costly delay and possible loss.

Government cooperation

For a number of years the Department of Commerce, through the Transportation Division of the Bureau of Foreign and Domestic Commerce, has continually stressed the importance of adequate packing of merchandise for export and has endeavored to acquaint shippers with the best accepted practices. Our improvements in packing for export and the consequent reduction in the enormous losses formerly incurred led to similar measures for needed improvements in domestic shipments.

Coincident with the movement for reduced distribution costs through simplified packing, there developed a wide-spread and systematic effort to simplify sizes and types of containers and packages. A Division of Simplified Practice was set up in the Bureau of Standards to serve as a clearing house or central agency. Through it manufacturers, distributors and consumer groups cooperate in a nation-wide program for avoiding the waste formerly caused by a needless variety in sizes, types, dimensions, models, patterns, or "line numbers" of commodities. The immediate objective has been to abandon all odd and unnecessary items and concentrate upon units of measure that will meet all demands without clogging the machinery of distribution, and slowing down the rate of turnover. A number of industries have sought the cooperation of the Division in working out their individual problems.

More than 170 Simplified Practice Recommendations (which have been developed through this cooperative effort to date) are records of retained items or varieties

considered adequate for normal demands.

In the interest of coordination and consequent economy, each step in the packaging of a product should be considered both independently and in terms of the next closely related steps, from the unit package, or primary container, in which the product is packed by the manufacturer, through the shipping container, the method of handling, and finally the best means of transportation to reach the ultimate consumer.

Excessive variety in the sizes and shapes of the primary (consumer) unit makes it necessary to manufacture the secondary and the shipping containers in an enormous variety of sizes and shapes. The shipping container is usually handled by more people than the unit package and, for this reason, should be given just as much consideration. The size of the shipping container is dependent not only upon the size of the unit package which it holds, but also upon the method of transportation and the amount of handling to which it is subjected.

Food containers and packages

One of the first general conferences held under the auspices of the Division of Simplified Practice (1923) discussed containers for food. This meeting was attended by representatives of the various container associations, grocers' organizations, container manufacturers, packers of food products, shippers and carriers and others interested, and committees were appointed to conduct surveys looking to the limiting of varieties and sizes of containers and packages. The following Simplified Practice Recommendations for food containers and packages have been developed by the industries concerned, and promulgated under the procedure of the Division on a voluntary cooperative basis:

R10 Milk and Cream Bottles and Bottle Caps (March 1, 1927): Recommends outside dimensions, weight of glass for the quart, pint and half-pint bottles, and a standard diameter and thickness for the paper disc closure.

Many changes have been made in the shapes or dimensions of milk bottles since 1927 and research in the glass container field has made it possible to retain the same strength with a lighter weight of glass in the bottle. Developments in the closure industries have made it necessary for the bottle manufacturers to change the standards for neck finishes. These changes have been made gradually from time to time.

- R42 Paper Bags for Groceries (Oct. 15, 1925): A simplified list of sizes (pounds) and capacities (cubic inches), for self-opening, square and flat bags. 1,580 items, amounting to 25.16 per cent of the sizes formerly listed, were dropped.
- R64-30 Folding Boxes for One Pound of Coffee (July 1, 1930): After a survey by representatives of the Paperboard Industries Association and the National Coffee Roasters' Association, two sizes were recommended as standards. 100 different shapes and gives had been used for the one model for the one standards. sizes had been used for the one-pound coffee carton alone
- R70 Salt Packages (May 1, 1927) (In process of revision)
- R91-32 Glass Containers for Preserves, Jellies and Apple Butter (December 15, 1932): Nine standard sizes for preserves (formerly 40); seven standard sizes for jellies (formerly 25); and four standard sizes for apple butter were adopted.
- R107-31 Glassine Bags (Oct. 14, 1932): List of sizes for flat and square glassine paper bags, reduced from 124 to 26.
- R120-40 Ice Cream Brick Molds and Cartons (January 1, 1931); revised July 1, 1936 and June 30, 1940): One standard mold for 2 gallons of ice cream (formerly 30); two each for the lined and for the unlined machine-filled carton, in both quart and pint sizes. Latest second revision recommends additional pint carton to fit the interest in bousehold refrirestrators. ice-tray in household refrigerators.
- R123-30 Carbonated Beverage Bottles (September 1, 1930): (In revision to include a simplified list of sizes for bottles of certain capacities, and standard weight of glass for each size of bottle).
- R131-35 Glass Containers for Mayonnaise and Kindred Products (1931; January 1, 1935): Five sizes adopted. A survey (1939) revealed that 98 per cent of production was packed in these five standard sizes.
- R132-36 Ice Cream Cups and Cup Caps (1932; July 1, 1936): The intermediate and tub shapes in 1/2 pint, pint and quart sizes are recognized standard packages under this recommendation; includes standard diameters for cup caps.
- R148-33 Glass Containers for Cottage Cheese and Sour Cream (January 1, 1933): Standard dimensions for bottles holding 8, 12 and 16 fluid ounces; (to be revised).
- R155-40 Cans for Fruits and Vegetables (1931; 1937; revision current): Lists 39 cylindrical and 2 square shapes of speci-fied dimensions; 19 of these designated for use exclusively with a single commodity, others used with 2 to 57 different designated
- R170-38 Spice Containers (June 15, 1938; revision current): Listed 1, 1¹/₄, 1¹/₂, 2, 3, 4, 8 and 16-ounce packages for ground spices with maximum and minimum capacities of containers. It has been agreed that the tapped-down volume of spices should show an average of 85 per cent of the initial flow-in filling.
- R175-40 Heavy-Duty Round, Nesting Paper, Food and Beverage Containers and Lids (September 15, 1940): Based on a proposed list of recommended standards covering type, size, shape, weights, etc., developed by the Standards Committee of the Cup and Container Institute, Inc., in cooperative procedure with Division of Simplified Practice.

Shipping containers

- R20-28 Steel Barrels and Drums (January 1, 1928): Lists stock types and capacities of steel barrels and drums.
- R146-38 Corrugated and Solid Fibre Boxes for Canned Fruits and Vegetables (Jan. 1, 1933; March 1, 1938; revision current): Lists inside dimensions of shipping boxes based on the number and arrangement of 41 accepted standard cans.
- R164-36 Tinned-Steel Ice-Cream Cans (July 1, 1936): Lists sizes and capacities of stock types (high and low).
- R171-38 Wooden Boxes for Canned Fruits and Vegetables (July 1, 1938): Same status as R146-38; to be revised for inside dimensions of shipping boxes.
- R135-32 Wooden Butter Tubs (January 1, 1932): Lists standard inside dimensions and overall length of staves for tubs holding 63 to 64, 33 and 10 pounds.

Paper or fibre containers

The recommendations for set-up boxes, folding cartons, corrugated containers and paper bags for notions and millinery were devised by a standing committee of the National Retail Dry Goods Association, and interested persons in the supplying industries, in cooperation with the Division of Simplified Practice.

R126-31 Set-up Boxes: Lists 75 sizes of container for all uses in department store (formerly 2,849). Definitions given for kind of,

- board, finish, caliper, packaging, nesting and construction, paper, stay and glue.
- R127-31 Folding Boxes: Lists 23 sizes (formerly 683).
- R128-31 Corrugated Boxes: Lists 61 sizes (formerly 889). Selection of sizes in revised schedule based partly on observation of quantities actually used, and partly from estimate of range sufficient for all uses. Store practice indicated that 7 to 20 sizes would be adequate for normal requirements.
- R129-31 Notion and Millinery Paper Bags: Lists 22 standard sizes of paper bags (formerly 343).
- R172-38 Stock Folding Boxes for Garmants and Dry Cleaning (September 1, 1938): Lists sizes of boxes and thick-ness of boxboard.
- R173-38 Stock Folding Boxes for Millinery (November 1, 1938): Lists dimensions, thickness of boxboard, depth of covers.

Packages and packaging

- R41-40 Package Sizes for Agricultural Insecticides and Fungicides (1926; 1938; 1940): Specifies type and sizes of retail package, number of packages in shipping box and territory for which each package is adapted.
- R60-30 Packaging of Carriage Machine and Lag Bolts (March 15, 1939): Lists standard packings, based on the quantity and gross weight, for each standard size and type of bolt.
- R65-31 Packaging of Overhead Electric Railway Material (October 1, 1931);
- R145-33 Packaging of Electric Railway Motor and Controller Parts (March 15, 1933);
- R161-35 Packaging of Automotive (bus) Engine Parts (September 1, 1935);
- R162-35 Packaging of Air Brake (Electric Railway) Parts (September 1, 1935)
- These four recommendations for standard packaging were developed by Purchases and Stores Committee on Standard Packages of the American Transit Engineering Association. Adoption of them has resulted in great savings and convenience in storing, unit piling, in-ventory, and distribution of parts.
- 69 Packaging of Razor Blades (July 1, 1928): Lists the number of blades per package, the number of packages per carton for each make or brand of blade; revision needed to cover new brands.
- 104-30 Packaging of Flash-Light Batteries (Effective July 1, 1930): Gives nominal dimensions of single standard zinc container, and unit of count or pack for small and large batteries.
- R117-30 Packaging of Dental Plaster, Investment and Artificial Stone (October 1, 1930): Gives simplified schedule for packaging based on net weights for different classifications.

Miscellaneous

- In addition to the specific recommendations for containers and packages there are other recommendations that are of direct or indirect interest to the manufacturers and users of containers.
- R44-36 Box Board Thicknesses (1925; December 31, 1936): Lists standard thicknesses for different types of fibre box board. Also standard weights for 500 sheets and for 1,000 sq. ft. of different types.
- R59 Rotary-Cut Lumber Stock for Wire-Bound Boxes November 1, 1926): Gives standard dimensions for air- and kilndried stock produced from gum and from pine or other soft woods.
- R68-33 Metal and Fibre Flashlight Cases (July 15, 1933): Lists standard types, sizes and finishes of flashlight cases in both metal and fibre.
- R47-28 Cut Tacks and Small Cut Nails (July 1, 1928)
- R144-37 Paints, Varnishes, and Related Products (July 15, 1937): Comprises both shades and containers.
- 92-38 Hard Fibre Twine and Lath Yarn
- 93-39 Paper Shipping Tags
- 110-29 Soft Fibre (jute) Twine
- 114-30 No. 1 Kraft Paper Sealing Tape
- 124-31 Polished Cotton Twine
- 136-32 Flax and Hemp Twine
- 177-41 Single-faced Corrugated Board Rolls

Color systems and reproduction methods

by Herbert J. Kaufman

CIENTIFICALLY organized color systems have a definite place in package design. With them orderly and properly balanced combinations may be visualized and worked out. Such sets of standard colors enable the designer to study results conveniently, without having to go to the time and trouble of mixing a wide variety of colors with pigments.

In America the most widely accepted system is that of Albert H. Munsell. Developed in 1900, it has since been improved by several authorities. The Munsell system comprises some 400 tones. Samples of these colors, executed in printing inks, are commercially available and are extremely practical to use. With them the designer may paste up actual models of his packages, knowing that his sketch will resemble the finished product.

The second most popular system in America is that of Wilhelm Ostwald, which comprises some 600 tones. While the Ostwald theory differs in principle from the Munsell, it also shows a scientifically ordered set of colors which may be arranged in numerous sequences for beautiful and appealing results. The most extensive set of color samples is that issued by Baumann of Germany, with over 1,300 colors on 3×5 -in. cards. It is widely used to locate and arrange color concords which may then later be matched with inks.

Finally there is "The Color Kit" of Faber Birren—a mechanical spinning device supplemented by 15 colored disks and a scale of mathematical formulas. With this color-wheel the designer may mix innumerable tones by spinning various combinations of discs in any proportion desired and then matching the result. Unusual colors may thus easily be developed and formulas written for future reference.

Color notation

No matter which system is used to describe a color, we must acknowledge the fact that all color possesses three characteristics. Just as in measuring a box, we give its length, width and depth, so, too, in measuring color, we use the three dimensions of hue, value and chroma.

Hue is the quality by which we distinguish one color from another, as red from yellow or yellow from blue. Value is the lightness or darkness of a color as compared with a scale of grays from white to black. Chroma is the strength of a color or the quality by which we distinguish a pure color from one that is grayed.

To apply these three dimensions, we first describe the hue of a color, as green, then designate value or the lightness or darkness; and to complete the description, give its chroma, whether it is a rich or a grayed green.

Primary considerations in the selection of package colors are visibility and legibility. The principle to be

observed here is that of sufficient contrast in value. Differences in value, without regard to hue or chroma, may make or mar the result. Contrast in value will make lettering or type, legible or illegible. A color of middle value will be least distinguishable on a color of equal value and the greater the contrast in value, the greater the legibility. In this connection, bear in mind that simultaneous contrast affects value contrast. A neutral gray of middle value appears lighter against black and darker when contrasted with white. The same thing holds true with any given hue.

Reproduction methods

The materials which enter into packaging are so varied and in some cases so uniquely different that although they may require the same machinery to produce, i.e., plates and press, ofttimes they require special handling and treatment. Then again, in deciding which process to use for reproduction, several factors must be considered and it is practically impossible to say that "A" process should be used over "B" process. In some cases, it makes no difference; in others, considerable.

The processes available for reproduction fall into three major classifications, according to whether the surface is raised, level or lowered.

Letterpress: Printing which comprises reproduction where the image to be printed is raised. Type, line cuts, halftones, bendays, stereotypes, electrotypes, tint blocks, rubber plates, wood cuts, linoleum blocks, etc., fit into this category and are the means of reproducing copy. The raised surface permits the inking roller to leave a deposit of ink which is then deposited directly on paper. Obviously, the plate or cut must be in reverse so that the image is positive on the paper. Sheet- and web-fed presses are utilized in this process. For halftone and four-color process work, it is necessary to use smooth surface or coated papers.

Planographic: In this process, image is on the same plane as the non-image area, but the image is ink-receptive while the non-image section is ink-repellent. The principle of oil and water never mixing applies in this process. In the early days of lithography, blocks of stone (limestone) were used, but today thin metal plates (aluminum or zinc) are the rule. The image is positive, since a transfer of the inked impression is made first on a rubber blanket, and then on the paper. Hence the commonly used term, "offset lithography." Some direct lithography, using the reverse image, is still being done. Photo-Lithography is the photo-mechanical method for making press plates. Two types of plates are used: albumin and deep-etch. The latter has an infinitesimally lowered image section. Most presses are sheet-fed (some

web-fed), and almost every type of paper from rough surfaced to fine coated can be utilized.

Collotype or photo-gelatin: This process is based on the oil-and-water never mixing principle. The nonimage areas are made ink-repellent by allowing the exposed gelatin-coated plate to absorb varying amounts of a glycerin solution. Unlike the lithographic process, no water is used; the required moisture is drawn from the air. Another dissimilarity is that no screen is used, since the finely reticulated surfaces of gelatin produce a print closely resembling a photograph.

Intaglio or gravure: This process is just the reverse of the letterpress method. The image is below the surface and can be likened to ink wells. The reproducing plate or roller consists of regular (screen) or irregular (grain) etched impressions, or lines and dots engraved by hand. These are filled with ink and the surface is then wiped with a "doctor" blade, thereby removing excess ink. The inkwells or cells, which are of varying depth, then transfer their different quantities of ink to the surface of the paper (sheet- or web-fed).

Gravure differs from letterpress and lithography in that the gradation of tones is effected by varying the thickness of the film of ink transferred to the paper, rather than the size of the dots. However, in the new (Dultgen) halftone method of reproduction used in color gravure, the dots are larger for solids and the film of ink thicker than in the light tones.

In addition to these three major reproductive methods there are others such as silkscreen, novaprint, thermographic, etc. It is best to consult an expert in the respective fields for advice on how to print. All processes have their advantages and disadvantages, depending on what you plan to achieve, and all produce different results. For further details of any particular process, a reference list is appended.

Copy selection factors

Another thing to consider is that copy must be prepared differently for various reproductive processes. In general, copy that is good for one process is good for any of them. It should be half again as large as desired in the finished print so that it can be reduced a third in the camera. Contrasting photographic copy reproduces better than soft photographs do. Type proofs should be clean and sharp and pulled from new type if possible.

For letterpress, photographic copy should be carefully selected for clarity and sharpness. The photo-engraver is practically helpless in trying to reproduce from poor copy. The camera eye is relentless in picking up defects, and a few dollars spent in retouching by an artist will often more than compensate the package for the expense involved. Avoid gray, non-contrasting shots because the screen of a halftone tends to gray a subject.

Art work and lettering should be firm, sharp and clean. Fuzzy lines should be eliminated by the artist because while the engraver can do it, the process is usually more costly. If possible, try to include the type in the plate; if not, the electro should include type. To be on the safe side, always send the working dummy to the engraver

so that he will know what it is all about. Avoid fine delicate type, especially serif types, for reverse plates (in which copy appears white on black background).

The most desirable copy is furnished all in one piece and is done in the same medium throughout. In other words, do not supply one piece of copy in water color and another in oil or Kodachrome and expect to get a perfect reproduction of each. Most houses rate media as follows: transparent water color, opaque water color, oils, pastels. Carbros are satisfactory if they are in register. Kodachromes are excellent if the shop has had experience with them. Colored photographs are usually the least desirable.

Background tints or solids in gravure should be made with colored papers. Variations in air-brush or other means of laying in color, while not apparent, to the eye come up with discouraging results in the final print. The best method is to have the tint "flushed in" by the gravure printer.

Once you have made your decision on the process to be used, it is well to check with the reproduction house on how they would like their copy prepared.

Legibility of color

Because legibility is an important factor in the success of a package, the following notes based on practical, scientific research are of value.

The most legible of all color combinations is black on yellow. White tends to blur, particularly in strong light, because of aberration in vision which scatters the bluish rays of light. In addition it lacks the attention value of pure spectral hues. Next to black on yellow comes green on white, then red on white, blue on white, white on blue, black on white, red on yellow. For fairly dim illuminations, typical of those found in retail stores, generally light packages are superior to dark ones for high visibilty. This is because the deeper colors tend to recede into their environment and be inconspicuous.

Protective colors

Certain products are subject to deterioration and rancidity when exposed to light. This unfortunate result is due mainly to radiation at the extreme ends of the spectrum. Brown bottles and yellow and amber cellulose are efficient in screening out ultra-violet rays.

According to special research conducted by the U. S. Bureau of Chemistry, the best color for transparent containers is a yellowish green. This hue transmits light predominantly in the central region of the spectrum and therefore screens out the ultra-violet and infra-red rays.

It should also be remembered that light colors reflect heat rays, while deep colors absorb them. In opaque packages an excellent container for fatty substances is metal foil, an efficient insulator. However, if metals are not used, white boards and papers, printed in white or light colors, will be found to afford far more protection than dark colors.

Illusions

Bearing on the package are several illusions. Light

areas will appear considerably larger in size than dark areas. This is because the light area, focused on the retina of the eye, tends to create an active rather than a passive image. Its edge tends to spread out like water on a blotter, thereby giving the light color increased dimensions. According to research the largest appearing color is yellow, then white, red, green, and blue, with black the smallest of all.

In a similar way, bright and pale colors will seem light in weight, while deep colors will seem heavy. Generally, the light and warm hues will tend to advance and appear nearer, while the cool and deep colors will tend to retire. The reason for this is that the lens of the eye grows farsighted when focused on rays at the red end of the spectrum and nearsighted when focused on rays at the violet end. The neutral point is in the yellow region.

Color clarity

Printing inks as well as paper stocks are of two main textures: (1) opaque and matt; (2) transparent and smooth. Brilliance of color generally is assured if the

TABLE I. EFFECT OF INKS ON COLORED STOCKS

Stock	Good Colored Inks	Poor Colored Inks
Yellow	Red, warm green, orange, brown. Deep blue or violet may neutralize fa- vorably to a deep black	Blue will turn olive. Pur- ple will turn brownish. Cool greens turn grayish
Red	Red, opaque yellow, opaque orange, maroon, warm purple. Deep blue and purple may form black	Green will turn brownish. Blue will turn muddy. Yellow, if not opaque, will wash out
Orange	Red, rich orange, brown. Deep intense blue or pur- ple may form black	Yellow will wash out. Blue will turn brownish. Green will turn olive
Green	Deep green, blue, violet, opaque yellow	Red will turn muddy. Orange will turn olive. Purple will turn dull
Blue	Deep blue, green, purple	Red will turn dull. Orange will turn muddy. Yel- low will turn olive

TABLE 2. EFFECTS OF SPECIAL INKS

Inks	Suitable Stocks	Poor Stocks	If Varnished
Ordinary transparent	Enamel; Offset Clay coated Brush finish enamel Machine finish	tion on patent	
Ordinary opaque	Machine finish Offset Clay coated; Kraft Patent-coated; Jute	Slight mottle on enamel stocks	Colors generally enhanced
Dull-set	All; can be formu- lated accordingly	Too soft for heavy - duty containers	
Gloss	Enamel Clay coated Brush finish enamel Patent coated Kraft and Jute (Special formulas)	Offset Machine finish	Not necessary
Silversheen	Enamel Brush finish enamel Clay coated Patent coated	Offset Machine finish Kraft Jute	Metallic quality is somewhat diminished; beauty not af- fected

Note: The above table refers mainly to inks for letterpress. Special inks for offset process on offset stocks are available in both gloss and silversheen

texture of the ink is like the texture of the stock. With dull-finish boards and papers, a dull-finish ink will appear richest. Where for purposes of protection a varnish is applied, the matt appearance will largely disappear and the colors will grow deeper and shinier. With finished papers and more shiny inks, there will be good clarity. All colors will deepen if coated with varnish.

With some respect paid to the above facts, the unkempt appearance of many containers may be overcome. Mottled, splotchy surfaces often result from the inks being only partially absorbed by a paper stock. If the inks are shiny and the stock dull, the result will naturally be poor. To assure a good, clean finish one of two things may be done: (1) On a dull, absorbent stock, specify inks that are also dull. The all-over effect will be consistent. (2) If basic inks and stock match in texture, an all-over application of varnish will affect them uniformly. Again the effect will be consistent. However, if shiny inks are used on dull stocks, a varnish coating will emphasize the gloss of the ink, but do little to improve the stock, and the container may thus tend to appear shoddy. Shiny inks on finished and enameled stocks rarely cause trouble, with or without varnish.

Good clarity of color is in constant demand, for such effects have the greatest human appeal. Ordinarily, clean, white stocks print best with transparent inks. Such inks reflect light from the surface of the stock through the ink film and, therefore, have a luminous beauty. On stocks that are grayer or yellower in tone, or thick in texture, the transparent ink will not be at its best. Here an opaque ink is desired—one that will hide the stock and reflect light from its surface rather than penetrate into it. Thus a transparent ink may be quite beautiful on coated stock, but grayish and dull on uncoated. Conversely, an opaque ink may glisten brightly on dull stock, but appear thick and dim on shiny stock unless it is formulated to dry with a high gloss similar to that of the board or paper.

Color mixture

There are three primary colors in printing ink: red, yellow, blue. Toners of these three hues, in various shades, will form most other colors either in actual mixture or in screen combinations.

Where one ink is printed over another or on a colored stock, the result will be good or bad depending on whether the colors are closely related or complementary. No printing ink is absolutely opaque. Therefore, complete coverage cannot be expected. The package designer should study Table I as a practical guide to color effects obtained, both on colored stocks and from overlapping inks.

Ink textures

Beauty of color in an ink implies not only the choice out of the spectrum, but also consideration of its texture. A red ink, for example, may be specified as (1) ordinary transparent, (2) ordinary opaque, (3) bronze red (with metallic top tone), (4) dull-set (to have the appearance of a matt surface), (5) high gloss, (6) silversheen. In

LOOK

Black on yellow is the most legible of all the possible color combinations

LOOK

Red on white ranks third in color attention value, and blue on white, fourth

LOOK

White on blue ranks fifth, and black on white, sixth in color legibility.

Legibility is an important factor in many types of printing. To solve the problem effectively scientific facts must be carefully weighed against human vision.

Where prolonged attention is given to the printed word, black on white is the best of all the color combinations.

Legibility is an important factor in many types of printing. To solve the problem effectively scientific facts must be carefully weighed against human vision.

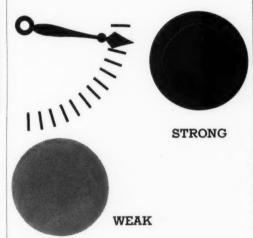
Where reading conditions involve brilliant light, black on ivory or cream is desirable.

Legibility is an important factor in many types of printing. To solve the problem effectively scientific facts must be carefully weighed against human vision.

White on black also offers good contrast.

One of these orange toners was printed with proper makeready on a clean press. The other was printed under smudgy conditions. Practically every human eye will have the same reaction to the two results—the one cheerful and one repellent.





Both of these blues came out of the same can. One was printed with correct makeready and a right impression of ink. The other was weakly printed. Under competition, these two colors would rank one hundred per cent and zero per cent, respectively, judged side by side.

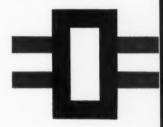
Data and color plates courtesy Eagle Printing Ink Co.,
Division General Printing Ink Corp.



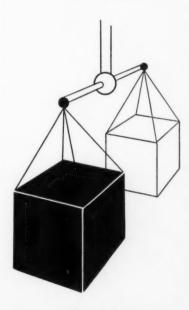
Yellow is large







Red is near



Blue is heavy

Color Legibility

There are several factors entering into the legibility of colors. Of first importance is contrast, the clear definition of characters and figures on a background.

While white and black represent ideal extremes, the combination is generally not superior to others, particularly in strong light. There is good reason for this. Because white reflects all qualities of light, it tends to create a certain blur in vision, this being due mainly to the shorter wave lengths of blue and violet which are the colors most quickly scattered by the atmosphere.

The most perfect color is yellow. Yellow is the hue of highest visibility in the spectrum. It also quenches the shorter blue waves and thus creates a clearer image in the eye. Combined with black it provides the most legible of all color combinations and will be found in highway signs throughout the country. Yet because yellow—or any other pure color—produces a hued after-image when visualized for any length of time, it is seldom appropriate for books or for any type matter requiring prolonged attention.

Color Appeal

Good printing inks require good craftsmanship to assure compelling results. Press equipment must be clean. Rollers and makeready must be excellent. Otherwise even the most concentrated ink tones may fail in their job.

The two demonstrations on page 25 are good examples in point. The bright, crisp beauty of orange may be relegated to oblivion if it appears dirty. An intense blue may grow wishy-washy if the press impression is anaemic.

The human eye is mighty quick to catch these variations. Although differences may be slight indeed, the appeal of the color either holds up or collapses utterly. This applies not only to pure hues but to tints and shades as well. Pure red is a beautiful color. So, too, is pink. Yet color tones between red and pink may tend to lack attraction.

Likewise pure orange and a rich shade of brown will both delight the eye. But tones between pure orange and brown may not.

Make your color expression direct and your printed results will have maximum effectiveness.

Color Appearance

The eye does not see all colors as of the same size. The brighter the area, the larger it will appear. The reason for this is that brightness is more stimulating to the nerves of the retina, producing an image that tends to "swell" in dimensions. The largest color is therefore yellow, followed by red, green, blue and black.

Similarly the lens of the eye does not focus the same to all hues. Red, in fact, makes the eye far-sighted, causing the lens to grow thicker. This action will give red a nearer position than cooler hues. Blue, on the other hand, causes the eye to grow near-sighted and the lens to flatten out. Red, orange and yellow, therefore, will rank 1, 2 and 3 in size, followed by green, blue and deep violet.

Deep colors also tend to appear heavier than pale colors. In this regard blue will seem to have far more density to it than white. The lightest of all colors will, therefore, be white, and the heaviest will be black.

All these points have important bearing on good printing, advertising and package schemes. Design elements should be arranged accordingly. Areas may be presumably increased in size, panels featured, packages given substantial qualities—all through hues that do each job most effectively.

each case red will be seen, but its finish will differ. Each particular texture has its appropriate beauty. The dull-set ink, for example, lets the vehicle anchor into the stock, thus holding the pigment on the surface and reflecting light almost equally from all angles, without shine. The glossy ink, vehicle and all, dries on the surface into a hard, lustrous film which reflects light more like glass or a highly polished surface. The silversheen ink combines a colored toner with an aluminum powder and has a beautiful finish which changes in appearance when viewed from different angles.

Color effects on metals, plastics, glassine, flint and pyroxylin coated papers, foils, waxed papers, cotton bags, glass, cellophane, etc., generally require specially formulated inks. Since such colors are ordinarily designed to dry on the surface of the material a wide choice of textures is not possible.

Samples of all these inks may be had from most printing ink manufacturers. Their working qualities are indicated in Table 2.

Technical aspects

One of the important problems in the printing of packages for foodstuffs, or other commodities with delicate odor or flavor, is that of off-odors caused by the printing ink. These odors or flavors are usually in the vehicles for the printing ink as a result of chemical reaction during drying. In printing packages of this sort, extreme care should be taken, because it is quite possible to compound inks so free from objectionable odor that they will not affect the product deleteriously. Recently, by use of some of the newer synthetic materials, it has been possible to formulate inks that are entirely free from objectionable odor. For various reasons these inks are not adaptable to all cases, but they should certainly be considered where odor or flavor is so important that one can afford to go to any lengths to preserve its quality.

Incidentally, it should be noted that ink is not the only offender in respect to odor and flavor. Other components of the package, such as paper, adhesives, closures—anything that in any way can come in contact with a perishable article—should be carefully checked.

In a few cases it may be desirable to add an odor to the ink, not to cover objectionable odors, but for some specific purpose. In general, this idea has not been particularly successful because of loss of the odoriferous principles by evaporation.

In the case of package inserts, the selection of printing ink is of the utmost importance. Here the inks must be not only free from any deleterious odor or flavor, but also not affected in any way by the contents of the package. Neither are they permitted to contain any poisonous ingredients, if the contents of the package are to be used for food or in any way in contact with the body. Each particular package must be carefully studied. In general, inks must resist oil and moisture, and, occasionally, abrasive action. The essential oils used as perfumes and food flavors are particularly active solvents for ink vehicles. In some cases, such as dried cereals, there is a surprising amount of abrasive effect during shipping.

When cotton bags are used as containers it is a great advantage if the printing inks can be readily removed by washing. It is common practice, especially in the rural communities, to realize the heavy bags which come in as containers for flour, animal feeds and other farm products, as a source of strong cotton cloth, particularly for dish towels, even as garments. Here it is essential that the printing ink be completely removed by ordinary washing. Such inks are readily available if specified.

Because many packages are designed specifically for their attractiveness in displays, and hence will be freely exposed to light in windows, on counters, presentations, and on store shelves, the printing inks used on packages

TABLE 3. SUMMARY

		BUMBERT		
Container	Process	Comments		
Labels	All	Fancy papers with all-over designs dictate lithography		
Wrappers	All	Long-run simple designs with re- peat runs require letterpress Pictorial designs on uncoated pa- pers: lithography cheapest		
Folding Cartons	Letterpress	Lithography taking on some of more elaborate designs. Web- gravure breaking into field		
Corrugated—Fi- bre Containers	Letterpress	Aniline making inroads		
Transparent Materials (1) Cellophane (2) Acetate (3) Pliofilm (4) Vinyls (5) Ethylcellulose	Letterpress; gravure; aniline	Best handled on web equipment. Isolated cases with special re- quirements done by letterpress.		
Package Inserts and Outserts	Lithography; letterpress	Both processes satisfactory. Length of average run of inserts gives lithography a price advantage. Generally printed on uncoated stock which allows lithography to give better reproductions.		
Cans (metal and fibre)	Offset lithog- raphy Letterpress	Metal decorating by offset lithog- raphy; fibre containers by letterpress; gravure and aniline coming in		
Tubes — collap- sible, metal, synthetic, etc. Non-Transparent and Translucent Materials		Special equipment such as tube decorating machines		
(1) Glassine (2) Protective	Letterpress or gravure All methods			
Papers (3) Foil Papers (4) Waxed Papers	Letterpress; Letterpress; aniline	Gravure coming in		
Gummed Tapes	Letterpress; gravure; aniline	Probably because of rewind requirements		
Bags	Letterpress; aniline on web presses			
Tags and Tickets	Letterpress; aniline on web presses			
Store Display Material	Lithography; letterpress	Lithography better for large units because of lower engraving costs		
Window Hang- ers and Stream- ers	Lithography; letterpress	Choice depends on size		
Decalcomanias, Transfers and Transparencies	Lithography	Some tax stamps done by steel engravings		

must be sunfast. The package producer, therefore, must be sure that the printing inks which he has purchased are well chosen, so that his package will not look dull and dingy after exposure in the retail store window.

As it begins to play an increasingly important function in preserving its contents against gain or loss of moisture or flavoring and other unwelcome changes, the package becomes increasingly complex in production. It is essential, therefore, that printing inks be considered in terms of plant procedure. For instance, if the package is to be coated with a moisture-proof lacquer, special care must be taken both with the inks and in the scheduling of work from printing press to lacquer machine, or the lacquers will not adhere properly to the printed areas. Likewise when ordinary coated or uncoated paper is replaced by plastic sheet materials, metallic foil, coated paper of unusual properties or lacquered paper, it will inevitably mean that the ink, too, must be changed to suit these new materials. Further, one frequently finds that it is impossible to use the same printing machinery, and hence the whole process of package fabrication is seriously altered.

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Color photography

by George Gabriel

HE invasion of color photography into graphic arts has made possible full color printing of greater visual and general appeal, of realism and dimension hitherto unobtainable which, in the final analysis, is the true objective of all graphic arts. As the subject is relatively new, such technical problems as color analysis, cost and correct application are matters for earnest consideration and study by package designers and buyers of engraving and printing. A cursory knowledge of the performance of color cameras, print-making processes and the various techniques for producing good color copy should be of assistance in the use of color photography.

Advertising and editorial sections of magazines, direct mail pieces, catalogs and point-of-sale displays are the biggest users of color photography. Increased costs for color reproductions are considerably outweighed by the power of color to attract attention and sell merchandise. It is also appearing on packages and labels, notably in food, drugs and cosmetics. It may be presumed that this use of color photography will extend to packaging of all descriptions whose contents permit effective illustration.

Color photography can now also be used for small and limited quantity needs such as sales portfolios, presentations, window display, sales unit merchandising, etc. The initial cost of engraving and printing which has discouraged extensive use of color for limited quantities has

been overcome through the perfecting of a color photographic process that can produce any number of duplicate prints at a reasonable cost.

Background and technical aspects

The search for color photography is as old as the subject of photography. It might well be imagined that the scientists who introduced photography about one hundred years ago sought to include color values as well as form and outline in their photographs. The sensitized materials and cameras then available limited results to the recording of the image in monochrome. Natural color photography remained in the laboratory for almost eighty years before it emerged possessed of such elements as faithful and well-balanced color values, three-dimensional effects and realism which could be transposed by the photo-engraver into reproductions of like value.

The understanding of the true nature of color had its scientific beginnings in the discovery of Sir Isaac Newton that white light passing through a prism will break up into a color spectrum. All color research and theory has as its basis the fact that white is the sum total of all color. In 1859, Louis de Hauron published a treatise on the possibilities of isolating the primary colors but the color-sensitive plate had yet to be perfected. Professor Vogel, in 1871, found a way to isolate red, blue and



Credit: From a color photograph by Arthur Gerlach made exclusively for International Printing Ink.



Credit: Color photograph by Man Low Studios. Engravings courtesy Lamont, Corliss & Co.

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yellow. At the beginning of this century, the Lumière patents were granted for a process for making color transparencies. However, the results were not sufficient to cause a wide-spread interest in color photography. About ten years ago, color research and experimentation had finally produced color cameras and color print processes that have made this country color-conscious in a relatively short space of time.

Color theories

There are two methods of color synthesis recognized in color photography—additive and subtractive. The subtractive method is the exclusive basis for all the present methods of reproduction, photographic as well as photomechanical. The additive method is the addition of primary light colors to a white surface to obtain a wanted color. To illustrate, if a beam of light through a blueviolet filter and a beam of light through a green filter were to converge on a white screen, the areas where they might overlap would reflect a blue-green. This theory is limited to projection of light through primary color filters upon a white surface and the resulting combination of colors reflecting from the surface. It can be used only for projection and transparency purposes but cannot serve as a basis for reproduction.

The subtractive theory involves the subtraction of color from a reflecting white surface to achieve the colors desired. Unlike the additive method, primary colors are not used, but, instead, secondary colors which are complementary to the primary colors. Whether it is dye, pigment or ink, the blue-green is composed of blue plus green, the magenta of blue plus red, and the yellow of green plus red. When any of the secondary colors are applied to a reflecting white surface, the following occurs: If blue-green is applied, all the red from the white reflecting surface is absorbed by the blue-green and only will be reflected blue-green; if magenta is applied, it will absorb all the green and reflect only the magenta which is a combination of blue plus red. Likewise, yellow applied will absorb all the blue and reflect only yellow which is made up of red and green. In the combination of any two secondary colors, there is a cancelling out of dissimilar elements. Hence, black, which is the absence of color, can be obtained by combining the secondary colors in equal strength on a white reflecting surface. The blue-green subtracts the red, the magenta then subtracts the green leaving a royal blue reflecting; the yellow then subtracts the blue and no color is reflected which is black. Varying strengths in combinations of secondary colors can produce the colors desired.

Color separation negatives

The initial step in making color process prints and reproductions is the separation negatives. In photography, with one exception, Kotavachrome, three separation records are used—red, green and blue-violet. In engravings for letterpress printing, a fourth record is added—the black key plate. In lithographic printing from flat

copy, as many color-separation records are made as are required to produce the desired results.

Each record or negative in a set of separation negatives is taken through a different color filter and becomes either the red, green or blue-violet record. In printing, the red record becomes the blue printer; the blue-violet record, the yellow printer; and the green record, the red printer. The color-separation negatives must be in balance as to density and contrast which to a large degree determines the quality of the print or reproduction. It is important that all the negatives in the set are in register to avoid color fringing in reproduction.

Color photographic methods

Natural color photography for commercial purposes has resolved itself into three generally accepted methods—the ABC method of direct separations; the two-mirror one-shot camera; and Kodachrome transparencies. Other color cameras and transparencies are in limited use because of particular shortcomings or lack of flexibility.

ABC method of direct separations: This is the oldest and still the most direct way of making separation negatives. In equipment, all that is needed is a good rigid camera with a color-corrected lens, color-sensitive plates and a set of filters. Registering of plates must be particularly watched so that all the negatives are identical in all respects save their relative densities. Time exposure factors for each color record are determined and the time of exposures varies accordingly. Care should be taken that there is no camera movement during the exposures. Glass or film negatives of the various panchromatic color-sensitive types obtainable through several manufacturers are used. From the above description it is readily adduced that this method of color photography is limited to still life subjects and flat copy. The results are excellent as there is a direct separation of light without any intervening factors as in other methods.

The one shot camera: This camera is designed for photographing people and things in action. Three negatives are simultaneously exposed in one mechanical operation. This is done by a camera of three compartments in which the three plates are so scientifically adjusted that before they are exposed the incoming beam of light is first divided by a system of mirrors and then passed through colored filters. After passing through the lens the light strikes the first mirror, which deflects some of it through a red filter and thence to the red record plate. The rest of the light passes on to a second mirror which deflects some more of it through a violet filter and thus exposes the violet record plate. The remainder of the light, which is not deflected, passes through the second mirror and a green filter to expose the green record plate.

The properties of transmission and deflection of the mirrors are so calculated that each negative properly developed will have the same density and range of contrast. A good two-mirror camera should be free of ghostly images and all three negatives should be in sharp focus and perfect register. The advantages of this camera are a greater speed than that of color film, and separation negatives of such sharpness of detail that considerable enlargement is possible in the making of prints. A $2^{1}/_{4} \times 3^{1}/_{4}$ -in. set of separation negatives will permit enlargement to a 16 \times 20-in. print. The standard two-mirror one-shot cameras are largely con-

fined to two manufacturers, the National Photocolor and Devin cameras.

Kodachrome transparencies: This method of color photography enjoys general popularity. Transparency film can be used in almost any type of camera with a good color-corrected lens and no special type of equipment is required. The film after exposure is sent to the Eastman Kodak Company for processing into a positive film in natural color. It is then viewed by transmitted light instead of light reflected from paper.

Kodachrome film is constructed of three film emulsions separated from one another by filter layers of gelatin. Starting from the base, there is the red-sensitive emulsion. On top of this is the red filter layer. The green-sensitive emulsion is next and over that is a yellow filter blanker. The uppermost emulsion is solely bluesensitive and makes the blue record. The processing is very complicated and cannot be treated here. of processing is included in the cost of the film. It is obtainable in rolls for small cameras and in cut sizes up to 11 × 14 in. Cut sizes are preferred for commercial purposes because of a larger image. In making color prints other than Kotavachrome, and engraved plates from Kodachrome, separation negatives must first be made. Because of the inherent nature of Kodachrome, care must be taken in photographing to avoid great contrast in color range. Kodachrome range of contrast presents serious problems to the color-print maker and to the engraver. Many engravers obtain excellent results working directly from the transparency instead of a color print although the price scale is considerably higher because of the problems involved.

Color print processes

After the separation negatives are made, the next step is the making of the color print. In most instances, the print serves as color copy for the photo-engraver. When a color print has been made without hand retouching in local areas, the engraver may choose to work directly from the separation negatives if they meet his requirements and use the print as a color guide. As previously noted, when Kodachrome is used for photographing, a color print of the transparency can be made for the engraver or engravings can be made from the color film. There are several processes available for making good quality prints in natural color.

Carbro process: With this process a skilled printer can produce color prints of very high quality for purposes of reproduction. The image is rich, lustrous and has definite body. However, the multiplicity of steps and number of operations require skillful handling as there is practically no opportunity for corrective measures while a print is in process of manufacture. Briefly, the first step is the bromide print enlarged to the exact image size from each separation negative. Each bromide print is squeegeed to carbro paper which contains the corresponding color pigment on a gelatine surface. The carbro paper then carries the image in relief and, in turn, is squeegeed to a celluloid to which the gelatine relief is transferred. By further processing, the relief image is defined and then squeegeed from the celluloid to a temporary paper support and then the three temporary supports are assembled on a permanent paper support and the print is made. In between the stages enumerated, there are numerous intermediate steps of processing. For each print desired, the whole process must be repeated.

Wash-off relief process: This imbibition process is also widely used for making color prints. Three films called matrices are made from the three separation negatives to the exact image size. Special developing and processing result in a relief image on each matrix. The

matrices are then immersed in their correct dyes of either blue-green, magenta or yellow. The dye is imbibed by the relief image in proportion to the depth of the relief and by rinsing, the dye is washed off all the areas of the matrix that have no gelatin, but retained on the gelatin areas that form the image. Special gelatin-coated paper that has been mordanted to receive the dyes is laid down and each matrix squeegeed to the paper in register. The dyes transfer from the matrices to the paper. After three such transfers, the print is made. A skillfully made imbibition print has the quality and brilliance that makes it suitable for reproduction or as a color guide. Corrections can be made in the various stages of processing and several prints can be made from the same set of matrices.

Chromotone process: Prints are made from the separation negatives on Chromotone materials in the same manner as black and white enlargements are made. In processing, the sub-stratum on the paper backing dissolves and the thin collodion film is stripped from the paper backing. The three "skins" are further processed by the re-development method and then are toned, each one to its proper color. The toned collodion images are assembled one on top of the other on white backing paper, taped down along the edges and left to dry for the completed print. This process does not require the elaborate materials of carbro printing. The results are brilliant and pleasing. For each print, the same procedure must be repeated.

Kotavachrome prints: This is a new process recently announced by the Eastman Kodak Company for color prints from Kodachrome transparencies. The processing is by the manufacturer. An opaque acetate base is coated with emulsions as is Kodachrome film and, when processed, a color print results. The problem differs from Kodachrome in that the print is seen by reflected light just as in paper prints. Amateur prints are made from 35 mm. Kodachrome in $2^1/_4 \times 3^1/_4$ -in. and $5^3/_8 \times 7^4/_5$ -in. sizes at respective prices of 75 cents and \$3.75 per print. Professional prints are made from cut size Kodachrome to six diameters enlargement in sizes from 8 × 10 in. to 30 × 40 in.; prices, \$12 to \$90 for first print.

In purchasing color photography, a print is usually included by most photographers in the purchase price. However, if a carbro or wash-off relief print is purchased independently, there are single-print color services doing creditable work at prices from \$35 to \$50 per print plus additional fees for separation negatives for prints from Kodachrome.

Color prints in quantity: This is an imbibition method developed by the Prism Printing Corp. to produce color prints in any quantity ranging from one to a thousand or more in all photographic sizes to 14 × 17 in. in regular production. This process does not specialize in prints for reproduction. It supplies prints for limited quantity needs in instances where the cost of engravings and printing is prohibitive. The prints are brilliant, sharp and uniform and are priced as low as 85 cents per print in 8 × 10-in. size from separation negatives for the first hundred prints and at less than half that price for additional quantities. They are recommended for sales portfolios, reproductions from flat copy and layouts, deluxe displays, greeting cards, etc. Separation negatives made for this process can also be used by photo-engravers.

In planning a color photograph, it is important to keep in mind that the quality of the photography determines the quality of the reproduction. Glossing over the photography in the hope that the engraver will make the necessary corrections too often ends in disappointment and extra costs. Excessive correction by hand tends to lessen the photographic quality.

Lackaging Ta	
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The food, drug and cosmetic act

OST important, most drastic, and broadest of all laws affecting packaging is the Federal Food, Drug and Cosmetic Act of 1938. In some way or other, this Act affects from 70 to 80 per cent of all packages placed upon the market.

The present Act is the most recent of a series of federal enactments which began with the passage, in 1890, of a law prohibiting the importation into the United States of adulterated or unwholesome foods, drugs or liquors.

In 1906, after prolonged discussion, a Food and Drug Act, known as the Wiley Act, was passed and remained in effect until superseded by the present Act. In May of 1933, the first draft of the present Act was submitted to Congress and after several revisions and the taking of thousands of pages of testimony, the present Federal Food, Drug and Cosmetic Act was passed and signed by the President on June 25, 1938. A later bill postponed the effective date of certain mandatory labeling provisions to January 1, 1940, and the effective date of other provisions to July 1, 1940. Since these postponement dates have now been passed, the Act is fully in effect.

The Food and Drug Administration, formerly in the Department of Agriculture, was transferred to the Federal Security Agency in 1940. The personnel of the Administration was not changed, however, and continuity of administrative procedure has been maintained.

The Food, Drug and Cosmetic Act is a very complex document made further complicated by the multiplicity of rulings and regulations issued under it. It is impossible, therefore, in a general description of the Act, to cover every point that may arise in the repackaging of any given product. The following sections, however, discuss the more general applications of the Act as they affect packaging.

Packagers are advised to consult with the local offices of the Food and Drug Administration or with their attorneys before entering into the production of any package, package part or label which might come under the regulation imposed by the Act.

Packaging provisions

Packaging provisions of the Act differ slightly in their application to foods, drugs and cosmetics. All three categories of products are covered by a provision against packaging under insanitary conditions which may lead to contamination with filth or may render the product injurious to health. All three categories likewise are covered by a provision against the use of containers composed, in whole or in part, of any poisonous or deleterious substance which may render the contents injurious to health. Failure to conform to either of these provisions constitutes adulteration.

Containers for all three categories of products must not be so made, formed or filled as to be misleading. Products in such containers are subject to the Act's penalties for misbranding. As an indication of the types of containers falling under this provision, the Chief of the Eastern District of the Food and Drug Administration provided the following list of factors contributing to deceptive packages:

- 1) Glass Bottles
 - a) Thick glass
 - b) Panels
 - c) Excessive height
 - d) Indented bottoms
 - e) Irregular shapes
 - f) Magnifying shapes
- 2) Opal Jars

Same as 1; also raised covers

- 3) Cardboard, Fibre and Metal Containers
 - a) Excessive size (slack-filled)
 - b) False bottom
 - c) Indented bottom
 - d) Raised covers
- All Types of Containers Oversize cartons
- Facino
- 6) Deceptive Colored Wrapping
- 7) Excessive Wrappings
- 8) False Packing

In any particular instance, it is a question of fact, whether or not a container is deceptive, and no iron-clad rules can be laid down. A number of rules or formulas have been proposed to assure compliance with the provisions of the Act covering misleading containers. Best known of these is the so-called Bristol formula for the manufacture of cartons in reduced sizes that more nearly fit tubes of tooth paste.

Manufacturers who pack odd-shaped bottles in cartons have been confronted with the possibility of falling under the deceptive packaging provision because the carton fill often falls as low as 25 per cent. Where the bottle itself is not deceptive, some manufacturers have recently endeavored to correct possible deception in the packages by printing a facsimile of the bottle label on outside of the carton. In the absence of Court interpretation, the Administration has not objected to this, provided it is done in such a way as to show the exact size of the bottle.

Another formula, developed by the State of North Dakota in the enforcement of the State Food and Drug Act, is used for determining whether bottles are deceptive. The formula is intended to contrast the true capacity with the apparent capacity, since bottles made of thick glass or with panels sunk in the sides or bottoms or bottles of odd shapes or with long necks appear to have a greater capacity than they actually possess.

North Dakota declared as normal, glass containers appearing $1^1/2$ times their capacity. That is, if the external volume of the bottles plus the volume of any panels or outside indentation is not more than $1^1/2$ times the capacity of the bottle, then the containers are considered to be normal. This rule has been applied to 2- and 4-oz. glass bottles.

The Food and Drug Administration has done considerable investigation on bottles of larger size which would indicate that the ratio of apparent size to actual capacity becomes progressively less as the size increases.

Many types of deception cannot be covered by formula (or have not to date been covered by formula). The shape of an article may throw the package into the deceptive class as, for instance, in the case of chocolate bars which have been excessively thinned out to provide an extremely large ratio of package face and weight. Deceptive colored wrapping applies particularly to the use of transparent colored materials as, for instance, the use of an orange transparent film to wrap partially smoked fish. This is interpreted as having the effect of giving the fish a rich color and, hence, the appearance (the deceptive appearance) of being fully smoked.

Manufacturers have had much difficulty with products that settle after packing, such as spices, talcum powder, tooth powder, and the like. A method of measuring the package content of spices, and a minimum content requirement based on the capacity of the container, have been worked out by the American Spice Trade Association. The same requirements are applicable to talcum powder, tooth powder, tea, and free-flowing macaroni products, and may later be found to apply to other materials. This is an informal guiding figure which, if met or exceeded, would in the opinion of the Administration constitute a satisfactorily filled package for the products indicated. To meet the requirement the maximum and minimum volumes occupied by two avoirdupois ounces are determined by the following so-called

Spice method

Maximum Volume: Roll two ounces of spice back and forth on a sheet of paper 10 times, fill into a 250-cc. graduated cylinder and note the volume.

Minimum Volume: Vigorously tap the cylinder 100 times and read volume; tap 20 times and again read volume; continue till 20 taps reduce the volume less than 1 cc. and note the final volume. To obtain the proper minimum volume where cosmetic powders are concerned, it is necessary to pound the cylinder vigorously rather than to tap it.

The average volume for any given weight of spice is obtained by direct proportion, using the average of the maximum and minimum volumes of two ounces obtained as indicated above. The per cent of fill is calculated from the average volume occupied by the spice and from the capacity of the container; for example, if the average volume occupied by the spice is 90 cc. and the container has a capacity of 100 cc., then the per cent of fill is 90 per cent.

Provisions affecting labeling

The terms "label" and "labeling" are not used synonymously in the Act. The term "label" is defined as a display of written, printed or graphic matter upon the immediate container of any article and a requirement that any word, statement or other information also appears on the outside container or wrapper of the retail package of such article or is easily legible through the outside container or wrapper. The term "labeling" means all labels and other written, printed or graphic matter upon any article or any of its containers or wrappers or accompanying such article. In general, required statements must appear on the label while prohibitions apply to labeling.

The food labeling provisions of the Act fall into 12 rules—two in the form of prohibitions and ten in the form of affirmative requirements:

- 1. The labeling of a food must not be false or misleading in any particular.
- 2. A food must not be offered for sale under the name of another food.
- 3. The label of a food which is an imitation of another food must bear, in type of uniform size and prominence, the word "imitation" and, immediately thereafter, the name of the food imitated.
- 4. A food in package form must bear a label containing the name and place of business of the manufacturer, packer or distributor.
- 5. A food in package form must bear a label containing an accurate statement of the quantity of the contents in terms of weight, measure or numerical count. Reasonable variations shall be permitted and exemptions as to small packages shall be established by regulations.
- 6. If a food purports to be or is represented as a food for which a definition and a standard of identity have been prescribed by regulations, its label must bear the name of the food specified in the definition and standard and, insofar as may be required by such regulations, the common names of optional ingredients (other than spices, flavoring and coloring) present in such food.
- 7. If a food purports to be or is represented as a food for which a standard of quality has been prescribed by regulations and its quality falls below such standard, its label must bear, in such manner and form as the regulations specify, a statement that it falls below standard.
- 8. If a food purports to be or is represented as a food for which a standard or standards of fill of container have been prescribed by regulations and it falls below the standard of fill of container applicable thereto, its label must bear, in such manner and form as the regulations specify, a statement that it falls below standard.
- 9. A food which does not purport to be one for which a definition and a standard of identity have been prescribed by regulations must bear on its label the common or usual name of the food, if any there be and, in case it is fabricated from two or more ingredients, the common or usual name of each such ingredient. Spices, flavorings and colorings, other than those sold as such, may be designated without naming each. Exemptions may be established by regulations to the extent that naming of the ingredients is impracticable.

- to. If a food purports to be or is represented for special dietary uses, its label must bear such information concerning its vitamin, mineral and other dietary properties as the administrator determines, and by regulations prescribes as, necessary in order fully to inform purchasers as to its value for such uses.
- 11. If a food bears or contains any artificial flavoring, artificial coloring or chemical preservative, it must bear labeling stating that fact. To the extent that compliance with this requirement is impracticable, exemptions shall be established by regulations. The requirement with respect to artificial coloring does not apply in the case of butter, cheese or ice cream.
- 12. Any word, statement or other information required by the Act to appear on the label or labeling must be prominently placed thereon with such conspicuousness (as compared with other words, statements, designs or devices in the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

Drug labeling provisions

The provisions relating to labeling of drugs and devices fall within 14 rules, four constituting prohibitions and ten constituting affirmative requirements:

- 1. The labeling of a drug or device must not be false or misleading in any particular.
 - 2. A drug must not be an imitation of another drug.
- 3. A drug must not be offered for sale under the name of another drug.
- 4. A drug or device must not be dangerous to health when used in the dosage or with the frequency or duration prescribed, recommended or suggested in the labeling thereof.
- 5. A drug or device in package form must bear a label containing the name and place of business of the manufacturer, packer or distributor.
- 6. A drug or device in package form must bear a label containing an accurate statement of the quantity of the contents in terms of weight, measure or numerical count. Reasonable variations shall be permitted and exemptions as to small packages shall be established by regulations.
- 7. A drug which is for use by man and contains any quantity of the narcotic or hypnotic substances named must bear on its label the name, quantity and percentage of such substance or derivative and in juxtaposition therewith the statement, "Warning—May be habit forming." The named substances are alpha eucaine, barbituric acid, beta-eucaine, bromal, cannabis, carbromal, chloral, coca, cocaine, codeine, heroin, marihuana, morphine, opium, paraldehyde, peyote, sulphonmethane and any chemical derivative of any such substance which derivative has been designated by regulations as habit forming.
- 8. The label of a drug which is not designated solely by a name recognized in an official compendium must

bear the common or usual name of the drug, if such there be, and in case it is fabricated from two or more ingredients, the common or usual name of each active ingredient, including the quantity, kind and proportion of any alcohol and also including whether active or not, the name and quantity or proportion of any bromides, ether, chloroform, acetanilid, acetphenetidin, amidopyrine, antipyrine, atropine, hyoscine, hyoscyamine, arsenic, digitalis, digitalis glucoside, mercury, ouabain, strophanthin, strychnine, thyroid or any derivative or preparation of any such substances contained therein. To the extent that compliance with requirements is impracticable, exemptions shall be established by regulations.

9. The labeling of a drug or device must bear adequate directions for use, provided that where the requirement as applied to any drug or device is not necessary for the protection of public health, the administrator shall promulgate regulations exempting such drug or device from such requirement.

10. The labeling of a drug or device must bear such adequate warnings against use in those pathological conditions or by children where its use may be dangerous to health or against unsafe dosage or methods or duration of administration or application, in such manner and form, as are necessary for the protection of users.

is recognized in an official compendium, it must be labeled as prescribed therein, provided that the method of packing may be modified with consent of the administrator. Whenever a drug is recognized in both the U. S. Pharmacopoeia and the Homoeopathic Pharmacopoeia of the United States, it is subject to the requirements of the U. S. Pharmacopoeia with respect to labeling unless it is labeled and offered for sale as a homoeopathic drug, in which case it is subject to the provisions of the Homoeopathic Pharmacopoeia of the United States and not to those of the U. S. Pharmacopoeia.

12. The label of a drug which has been found by the Secretary to be liable to deterioration must bear a statement of such precautions as regulations require as necessary for the protection of the public health.

13. A drug which purports to be or is represented as a drug the name of which is recognized in an official compendium, if its strength differs from, or its quality or purity falls below, the standard set forth in such compendium, must plainly state on its label its difference in strength, quality or purity from such standard.

14. Any word, statement or other information required to appear on the label or labeling must be prominently placed thereon with such conspicuousness (as compared with other words, statements, designs or devices in the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

Cosmetic labeling provisions

Cosmetic labeling provisions fall within five rules, including one prohibition and four affirmative requirements:

1. The labeling of a cosmetic must not be false or misleading in any particular.

2. A coal-tar hair dye which may be injurious to consumers under the conditions of use prescribed in the labeling or under such conditions of use as are customary or usual must bear the following legend conspicuously

Caution: This product contains ingredients which may cause skin irritation on certain individuals and a preliminary test according to accompanying directions should first be made. This product must not be used for dyeing the eyelashes or evebrows: to do so may cause blindness.

The labeling of such hair dye must bear adequate directions for such preliminary testing.

3. A cosmetic in package form must bear a label containing the name and place of business of the manufacturer, packer or distributor.

4. A cosmetic in package form must bear a label containing an accurate statement of the quantity of the contents in terms of weight, measure or numerical count. Reasonable variations shall be permitted and exemptions as to small packages shall be established by regulations.

5. Any word, statement or other information required to appear on the label or labeling must be prominently placed thereon with such conspicuousness (as compared with other words, statements, designs or devices in the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

An exemption is provided for cosmetics which are to be processed, labeled or repacked in substantial quantities at establishments other than those where ordinarily processed or packed from certain labeling requirements of the Act, provided that such cosmetics are not adulterated or misbranded upon removal from such processing, labeling or repacking establishments. A similar exemption applies to drugs and foods. Small open containers of fresh fruits and fresh vegetables are also exempted by regulations from certain labeling requirements.

Labeling provisions for certified coal-tar colors

The labeling requirements for certified coal-tar colors are found partly in the Food, Drug, and Cosmetic Act itself and partly in the regulations for coal-tar colors. The label should carry:

- 1. An accurate statement of the net contents of the package.
- 2. The name and place of business of the manufacturer, packer, or distributor.
- 3. In the case of mixtures for use as food, the names of the component colors and of each diluent contained in the mixture.
- 4. The name of the color.
- The lot number of the batch.
- 6. The pure dye content of the color.
- 7. In the case of a color certified for a limited use, a statement setting forth this limitation.

Certain small packages of certified coal-tar colors are exempt from the labeling requirements which are relative to net contents.

OFFICIALS ADMINISTERING THE FEDERAL FOOD, DRUG AND COSMETIC ACT

ADMINISTRATOR OF THE FEDERAL SECURITY AGENCY
Paul V. McNutt

Food and Drug Administration

Commissioner of Food and Drugs: W. G. Campbell Assistant Commissioner: Dr. P. B. Dunbar Assistant to the Commissioner: F. B. Linton
Chief Educational Officer: Ruth de Forest Lamb Principal Technical Adviser: C. W. Crawford Interstate Division: L. D. Elliott Import Division: A. E. Taylor Division of State Cooperation: W. S. Frisbie
Drug Division: (vacant)
Food Division: W. B. White Microanalytical Division: B. J. Howard Pharmacology Division: H. O. Calvery Vitamin Division: E. M. Nelson Bacteriology Division: A. C. Hunter Cosmetic Division: Dan Dahle

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A. J. Brown

Portland, Ore. (substation): 301, U. S. Custom House; R. C. White Salt Lake City, Utah (substation): 430, Post Office Bldg.; J. R. White

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Adulteration

Numerous provisions in the law apply to the adulteration of foods, drugs and cosmetics. In most cases these provisions do not affect the packaging operations or the packages themselves, except insofar as the penalty for adulteration involves a confiscation and seizure of packaged products. However, the provisions of the law applying to preparation or holding of foods, drugs or cosmetics under insanitary conditions obviously apply to packaging as well as to processing conditions.

Enforcement

The Food and Drug Administration is armed with a number of powers to secure the enforcement of provisions and prohibitions contained in the Act. Violation of the prohibited acts, such as the introduction into interstate commerce of adulterated or misbranded foods, drugs or cosmetics is made a misdemeanor under the law. The penalty for such violation is imprisonment for not more than one year or a fine of not more than \$1,000 or both. Second offenders are liable to imprisonment for not more than three years or a fine of not more than \$10,000. Where intent to defraud or mislead is found, a penalty of three years imprisonment or \$10,000 fine or both may be imposed. These criminal provisions, while constituting a big stick behind the door, are perhaps the least utilized of the enforcement procedures provided by the Act. The Administration is empowered to proceed against merchandise as well as against persons. Articles

that are adulterated or misbranded and introduced into interstate commerce are liable to seizure by the Administration and, if found by the courts to be adulterated or misbranded, may be disposed of by destruction or sale.

Such drastic proceedings are not, however, undertaken in most cases. The law provides that nothing in the Act shall be construed as requiring the Administration to report for prosecution or to institute libel or injunction proceedings where minor violations of the Act are concerned, provided the Administration believes that the public interest will be adequately served by a suitable written notice or warning.

Far more important to the average manufacturer than the criminal provisions or the seizure and trial provisions of the Act is the fact that failure to conform to the packaging and labeling provisions and consequent action by the Administration may involve the manufacturer in a whole series of extremely expensive package changes and may involve the loss of dealer good will, adverse publicity and a dislocation of production and shipments.

Because of these economic consequences—quite as much as because of the punitive provisions of the law—manufacturers in general make every effort to insure, in advance, that they achieve a satisfactory degree of compliance with every provision of the Act. To date, the Administration has proceeded only in the more flagrant cases of violation. This applies particularly to the newer provisions for which the groundwork had not been laid by the earlier Food and Drug Act.

State and local laws

TATE legislatures, through their inherent police power as well as through their constitutional powers involving the protection of public health and the like, have undoubted rights to pass legislation to protect the public against adulterated and misbranded foods, drugs and cosmetics. The validity of state laws is in no way affected by federal laws, except where the former are conflicting.

The nature of state statutes differs considerably in the various states. At least 39 states have laws relating specifically to packaging, labeling, adulterating, or misbranding. Several of these have adopted the Federal Food, Drug, and Cosmetic Act of 1938 in its entirety, among them: California, Connecticut, Delaware, Louisiana, New Jersey, North Carolina, Oklahoma, Oregon, Tennessee, Utah, Vermont, and the Territory of Hawaii. Several other states have separate laws for foods and/or drugs and cosmetics, and some have special statutes covering dairy products: Arizona, Alabama, Arkansas, Colorado, Illinois, Kentucky, Maryland, Massachusetts, Michigan, Missouri, Minnesota, Nebraska, New Mexico, New York, North Dakota, Rhode Island, and Virginia.

A few have special laws or regulations on packages,

labels, weights and measures: Arizona, Delaware, Florida, Illinois, Iowa, Kansas (newly revised) Maine, Montana, Ohio, Pennsylvania, Washington, West Virginia, and Wisconsin.

In general, state laws and local ordinances are designed principally to cover products manufactured within the state and sold only within the state (i.e., products outside the reach of the federal authorities). Although they apply equally to foods, drugs or cosmetics sold within the state whether or not (in most instances) the product is manufactured within that state. Thus manufacturers are obliged, in planning new packages, to consider the effect upon package design, label and structure not only of the federal statute, but of the laws of the state or states in which the product is intended to be sold.

Wherever the market in a given state promises a sizable present or potential sales outlet, the manufacturer will be well advised to check the state law and to attempt to make his package conform with state law requirements which may be more stringent or more restrictive than the federal law. State requirements cannot relax federal restrictions which prevail throughout the United States.

OFFICIALS ADMINISTERING STATE REGULATORY LEGISLATION

- Alabama:—Director, Division of Agricultural Chemistry, Department of Agriculture and Industries, Montgomery.
- Arizona:—Director, State Laboratory, Tucson. State Dairy Commissioner, Phoenix.
- ansas:—State Health Officer, Little Rock. Secre-tary, State Board of Pharmacy, Little Rock.
- California:—Chief, Bureau of Food & Drug Inspection, State Department of Public Health, San Francisco. Chief, Bureau of Dairy Service, Division of Animal Industry, Sacramento.
- Secretary, State Board of Health, Denver. State Dairy Commissioner, Denver.
- Connecticut:—State Dairy & Food Commissioner, Hartford. State Chemist, Connecticut Agricultural Experiment Station, New Haven.
- Delaware:—Executive Secretary, Board of Health, Dover. Chemist, State Board of Agriculture, Dover.
- District of Columbia:—Health Officer, Washington, D. C.
- Florida:—Commissioner of Agriculture, Tallahassee. State Chemist, Tallahassee.
- Georgia:—Commissioner of Agriculture, Atlanta. State Chemist, Atlanta. Chief Food Inspector, Atlanta. Chief Drug Inspector, Atlanta.
- Hawati:-Food Commissioner and Chemist, Honolulu. Idaho:-Director of Public Health, Boise. State Chemist, Boise.
- Illinois:—Superintendent, Division of Foods & Dairies, Department of Agriculture, 228 South Wabash Ave., Chicago.
- Indiana:—Chief, Food & Drug Bureau, State Board of Health, Indianapolis. Chief, Bureau of Dairy Products, State Board of Health, Indianapolis.
- Iowa:—Secretary of Agriculture, Des Moines. Chie Chemist, Department of Agriculture, Des Moines.
- Kansas:—Secretary, State Board of Health, Topeka. Assistant Chief Food & Drug Inspector, State Board of Health, Topeka.
- Kentucky:—Director, Bureau of Foods, Drugs & Hotels, State Department of Health, Louisville.
- Louisiana:—President, State Board of Health, New Orleans. Chief, Food & Drug Section, State Board of Health, New Orleans. Chief, Chemical Section, State Board of Health.
- Maine:-Chief, Division of Inspection, Department of Agriculture, Augusta.
- Maryland:—State Food & Drug Commissioner, Balti-more. Deputy Commissioner, Department of Health, Baltimore.
- Massachusetts:—Director, Division of Food & Drugs,
 Department of Public Health, State House, Boston.
 Director, Division of Standards, State House, Boston.
- Michigan:—Director, Bureau of Foods & Standards,
 Department of Agriculture, Lansing. Director,
 Bureau of Dairying, Department of Agriculture,
 Lansing. State Analyst, Department of Agriculture, Lansing. Director of Drugs & Drug Stores,
 State Board of Pharmacy, Lansing. Director,
 Bureau of Fruit & Vegetable Inspection, Department of Agriculture, Lansing.
- Minnesota: —Commissioner, Department of Agriculture,
 Dairy & Food, St. Paul. Chief Bacteriologist,
 Department of Agriculture, St. Paul. Chief
 Chemist, Department of Agriculture, St. Paul.
- issippi:—Commissioner of Agriculture and Commerce, Jackson. State Chemist, State College.
- Missouri:—State Health Commissioner (Food & Drug Laws), Jefferson City. Commissioner of Agricul-ture (Dairy, Ice Cream, Egg Laws), Jefferson City.

- Montana:—Director of Foods & Drugs, Department of Public Health, Helena. Division of Dairying, De-partment of Agriculture, Labor & Industry, Helena.
- Nebraska:—Director, Department of Agriculture and Inspection, Lincoln. Chief, Bureau of Dairies (Foods and Weights and Measures), Lincoln.
- Nevada:—State Food & Drug Commissioner, Reno.
- New Hampshire:—Director, Division of Chemistry & Sanitation, State Board of Health, Concord.
- New Jersey:—Chief, Bureau of Foods & Drugs, Department of Health, Trenton. Chief, Bureau of Chemistry, Department of Health, Trenton.
- New Mexico:-Director of Public Health, Santa Fe. State Dairy Commissioner, State College
- New York:—Director, Bureau Food Control, Department of Agriculture & Markets, Albany. Director, State Laboratory, Albany. Secretary, State Board of Pharmacy, State Education Building, Albany.
- North Carolina:—Commissioner of Agriculture, Raleigh. State Chemist, Department of Agriculture, Raleigh.
- North Dakota:—State Food Commissioner & Chemist, Bismarck. State Dairy Commissioner, Bismarck.
- Ohio:—Director, Department of Agriculture, Columbus.

 Chief, Division of Foods & Dairies, Department of Agriculture, Columbus.
- Oklahoma:—Assistant Commissioner of Health, Oklahoma City. State Dairy Commissioner, Oklahoma City.
- Oregon:—Director, Department of Agriculture, Salem. Chief, Division of Foods & Dairies and Weights & Measures. Ch culture, Salem. Chief Chemist, Department of Agri-
- Pennsylvania:—Director, Bureau of Foods & Chemistry, Department of Agriculture, Harrisburg. Secretary, State Board of Pharmacy, Harrisburg.
- Rhode Island:—Chief Inspector, Division of Foods and Drugs, State Department of Public Health, Providence.
- South Carolina: Commissioner of Agriculture, Colum-
- South Dakota:—Secretary, Dept. of Agriculture, Pierre-State Chemist, Vermillion.
- Tennessee: Commissioner of Agriculture, Nashville. Superintendent, Division of Foods, Fertili Dairies, Department of Agriculture, Nashville.
- -Director, Food & Drug Bureau, State Board of Health, Austin.
- Utah:—State Board of Agriculture, Salt Lake City.
- Vermont:—Secretary, State Board of Health, Burlington. Chemist, State Board of Health, Burlington.
- Virginia:—Commissioner of Agriculture & Immigration, Richmond. Director, Dairy & Food Division, De-partment of Agriculture & Immigration, Richmond. Chief Chemist, Department of Agriculture & Immigration, Richmond. Pharmacy, Richmond. Secretary, State Board of
- Washington:—Supervisor, Food & Drug Division, State Department of Agriculture, Olympia. State Chemist, University of Washington, College of Pharmacy, Seattle.
- t Virginia:—Commissioner of Health (Foods and Drugs), Charleston. Commissioner of Agriculture (Foods), Charleston. West Virginia:-
- Wisconsin:—Director, State Department of Agriculture, Madison. Chief, Dairy Division, Department of Agriculture, Madison. Supervisor, Food Inspection Department of Agriculture.
- Wyoming:—Acting Commissioner, Department of Agri-culture, Cheyenne. State Chemist, Laramie.

Regulations affecting special trades

N certain industries and when shipping through certain channels, packagers are required to conform to the rules and regulations of both the government agencies and the semi-official organizations representing such groups as the railroads or the motor freight carriers. The new and the more important of these regulations are discussed here. More detailed data should be obtained from the particular bureaus or organizations which have jurisdiction in the individual case.

Labeling of wool products

One of the most important new statutes is the Wool Products Labeling Act of 1939, which became effective July 15, 1941. Under its rules and regulations every wool product subject to the Act must be marked by a stamp, tag, label or other means of identification in conformity with its requirements.

The information on the identification must include the fibre content of the product, the maximum percentage of any non-fibrous loading, filling, or adulterating matter, in the total weight of the product, and the name of the manufacturer.

The name need not appear upon the label if it bears an identification number registered and assigned by the Federal Trade Commission as the mark that identifies the manufacturer and by which the latter is bound as fully as though his name were used. In addition to this number, the label or mark of identification should bear the name of at least one person who subsequently sells the product to a retailer or consumer. The name of the seller, together with the manufacturer's registered number, should remain on the label until it is delivered to the consumer.

To use a registered number instead of his name upon the label or mark of identification on his product, a manufacturer may make application to the Federal Trade Commission. The Commission will assign to him such registered number or numbers as are appropriate for his use and suggest the form that the label or mark of identification should take.

Such application to the Commission must be made in writing, duly executed under oath or affirmation, and must be submitted in quadruplicate in a special approved following form.

The application must be accompanied by a statement of the business conducted by the applicant and designation of the kinds of wool products manufactured or sold by him.

Types of labels and affixing of marks

The stamp, tag, label, or other identification, must be appropriate to the nature of the product and must be affixed securely enough to remain on the product in good condition throughout the sale, distribution and handling

of the product until it is delivered to purchasers. The required information may be stenciled, imprinted, or branded upon the product itself, attached to it in the form of a strong, durable label securely sewed or stapled, or a strong, durable tag securely tied to it.

The label or other mark of required information must be affixed to and displayed on the container, wrapper, binder or other means of packaging of wool products subject to the Act:

a) Where marking the product itself is impossible, or where such marking would be inadequate to give consumers the required information or to prevent deception;

b) Where the wool product is marketed or sold and delivered in a container that remains intact until after it is delivered to the consumer. If possible the packaged product must also be marked appropriately to show the required content of fibre and material, especially if it is likely to be removed from the sealed container or the container is to be opened for purposes of display, sales or other reasons, before it is purchased. Where the product bears a label or mark of identification which is clearly visible to the purchaser when offered for sale, no label or mark of identification need be placed on such container.

Liquor package regulations and labels

The Alcohol Tax Unit of the Bureau of Internal Revenue of the Treasury Department of the United States is charged with the administration of the laws and regulations concerning distilled spirits, alcoholic wines, fermented liquors, cereal beverages, denatured alcohol and other such products. Under these laws, the Bureau regulates the size, printing, marking, use and re-use of containers designed or intended for use for the sale and resale of distilled spirits. The regulations governing these operations are many and varied. Five pamphlets are available from the Superintendent of Documents, Washington, D. C., detailing the regulations as follows:

- No. 5. Labeling and Advertising of Distilled Spirits
- No. 6. Bottling of Distilled Spirits in Bond
- No. 11. Bottling of Tax-Paid Distilled Spirits
- No. 13. Traffic in Containers of Distilled Spirits
- No. 15. Rectification of Spirits and Wines

These regulations cover a very wide series of points relating to the manufacture of liquor bottles, the storage of liquor bottles, the identification of liquor bottles, their labeling, their size, the places in which they are to be filled, their importation, application of tax stamps, etc.

Label requirements

Mandatory label information requirements are as follows:

A. On the brand label:

- 1) Brand name
- 2) Class and type
- 3) Name and address.
- B. On the brand label or on a separate label (back or front):
 - In the case of imported distilled spirits, name and address of importer.
 - 5) In the case of distilled spirits bottled for the holder of a permit, or a retailer, name and address of distiller, blender or bottler.
- C. On a separate label (for the purpose of these regulations to be known as the Government label), in such manner and form as shall be prescribed by the Administrator:
 - 6) Alcoholic content
 - 7) Net contents
 - 8) Artificial or excessive coloring or flavoring
 - 9) Percentage of neutral spirits and name of commodity from which distilled, or in case of continuously distilled neutral spirits or gin, the name of the commodity only
 - 10) Age of whiskey and straight whiskey, respective percentages of whiskey, straight whiskey and neutral spirits and type of cooperage
 - State of distillation of domestic types of whiskey and straight whiskey, except blends.

Detailed instructions are provided for compliance with each of the requirements cited above.

Another section of the labeling regulations provides the following general requirements:

- a) Contrast background
- b) Size of type
- c) English language
- d) Location of label
- e) Labels firmly affixed
- f) Additional information on labels
- g) Representations as to materials
- h) Upon request of the Administrator, there shall be submitted to him a full and accurate statement of the contents of the bottles to which labels are to be or have been affixed.

Other regulations prohibit the simulation of government stamps and the use of certain terms such as "double distilled" or "triple distilled" and the use of written or graphic matter on individual coverings, cartons or other containers of a type prohibited from appearing on the label or bottle. Certificates of approval of labels of domestically bottled distilled spirits must be secured from the Administrator by the bottler.

The federal law provides many detailed restrictions as to the location, construction, equipment and operation of liquor bottling plants. These vary according to the type of product and type of plant. Detailed information is available from the Alcohol Tax Unit, Bureau of Internal Revenue, Treasury Dept.

The law requires the application of tax stamps over the mouth of each bottle of distilled spirits or compounds containing distilled spirits and on certain types of wines. Pertinent points covered are:

- a) Manner of affixing stamps
- b) Concealing or obscuring stamps prohibited
- c) Affixing stamp over cup or cap.

Affixing stamps and markings to cases and barrels.

Standard sizes of bottles prescribed for distilled spirits: Seven permitted. These are, respectively: I gal., 1/2 gal., I qt., 4/5 qt., I pt., 1/2 pt. with a 4/5 pt. allowable for Scotch and Irish whiskies, Scotch and Irish type whiskies and for brandy and rum. Bottles utilized must contain the quantities named with a head space not in excess of 8 per cent of the total capacity of the bottle after closure.

Federal trade commission

Under the Wheeler-Lea Act, an amendment of the Federal Trade Commission Act passed in March of 1938, the Commission was given more effective powers of control over false advertising of foods, drugs, devices, and cosmetics. Thus two bodies control the claims that may be made for any product in these fields. Detailed information on the regulations under this Statute may be obtained from any office of the Commission.

Additional federal food statutes

There are a number of statutes, relating to foods, viruses, serums, toxins, insecticides, etc., which have been on the books for many years. In most cases, the name of the act describes the special group of products falling under its provisions Those that fall under the jurisdiction of the Food and Drug Administration are: the Filled Milk Act, the Import Milk Act, the Tea Importation Act, and the Federal Caustic Poison Act, together with the following which relate specifically to the Federal Food, Drug, and Cosmetic Act: the Act of March 4, 1923, defining butter and providing a standard therefor; the Act of July 24, 1919, defining wrapped meats as in package form; and the Seafood Act of August 27, 1935.

The Insecticide Act is still administered by the Department of Agriculture.

Postal department regulations

The Post Office Department has prescribed regulations to the preparation, wrapping and packing of parcel-post or fourth-class mail matter. These regulations are contained in Circular 3 of the Division of Classification, dated October, 1937; available through any postmaster. Examination: Fourth-class matter must be so wrapped that the contents may be examined easily by postal officials. When not so wrapped, or when it contains writing not authorized by law, the matter is subject to first-class postage.

Nailed boxes: Parcel-post mail may be enclosed in boxes to which the lids are nailed or screwed, provided the lids can be readily removed with a chisel or screw driver for examination of contents.

Containers and packing: All matter must be securely packed and wrapped or packed in a strong container so as to bear transmission without breaking or injuring the mail bags, their contents or the persons handling them. Many articles are damaged in the mails

because they are not properly packed to withstand the necessary handling.

Containers previously used for shipping high explosives having a liquid ingredient (such as dynamite) must not be used for shipments of any article by parcel post. Containers which have been used for the shipment of other high explosives must have all marks removed before being used for shipment of articles by parcel post.

Harmful articles not absolutely excluded from the mails, but which, from their form or nature, might, unless properly secured, destroy, deface or otherwise damage the contents of the mail bag or harm the person of anyone engaged in the postal service, may be transmitted in the mails only when packed in accordance with the postal regulations.

Pyroxylin plastics (celluloid, fiberloid, pyralin, viscoloid, zylonite, etc.), in sheets, rods or tubes must be packed in strong spark-proof wooden boxes and to each parcel must be attached the diamond-shaped yellow caution label described in section 588, Postal Laws and Regulations.

As an exception to the above, pyroxylin sheets in packages not exceeding one-half inch in thickness may be packed in containers made of two thicknesses of strong double-faced corrugated fibreboard and small quantities may be shipped in strong strawboard tubes lined with single-faced corrugated pasteboard.

Admissible liquids and oils in packages not exceeding the limit of weight of fourth-class matter will be accepted for mailing when intended for delivery at the office of mailing or on a rural route starting therefrom when enclosed in securely closed containers, provided it is not necessary to transport them over steam or electric railways.

Admissible liquids and oils, pastes, salves or other articles easily liquefiable shall be accepted for mailing, regardless of distance, when they conform to the conditions prescribed by section 590, Postal Laws and Regulations, which may be consulted at any post office.

Mailable liquids in tightly closed metal containers in quantities of r gal. or more shall be accepted for mailing when suitably boxed or crated to be dispatched outside of mail bags and labeled "Fragile—liquid. This side up," but when in extra strong metal containers, such as heavy milk cans, the boxing or crating may be omitted. Fragile articles: Articles easily broken must be securely packed in wooden or strong double-faced corrugated fibreboard boxes with ample cushioning material of excelsior, crushed paper or the like, completely surrounding each article to prevent damage. All such parcels must be labeled "Fragile."

Perishable articles must be marked "Perishable" and it is advisable that they be sent as special-delivery matter by affixing stamps for the special-delivery fee in addition to the regular postage, thus expediting their delivery. Articles likely to spoil within the time reasonably required for transportation and delivery will not be accepted by post office authorities for mailing.

Unmailable matter: All matter is unmailable which is of a harmful nature, such as poisons, explosives and corrosive articles, etc.

Requests for further information should be addressed as follows:

Third Assistant Postmaster General, Division of Classification: for rules on the classification and admissibility of matter as parcel-post mail, rates of postage, limit of weight and size, manner of addressing and wrapping so as to permit examination, permissible enclosures and additions, attaching communications to parcels, etc., and for additional copies of Circular 3.

Third Assistant Postmaster General, Division of Registered Mails: for rules on the insurance, C.O.D. (including demurrage charge) and registry features.

Second Assistant Postmaster General, Division of Railway Mail Service: for rules on the admissibility to the mails and wrapping of matter which from its form or character would be liable to injure the mails or the person of postal employees.

Package and trade-mark trespassing

by L. W. Mida

MANUFACTURER introducing a new package would be less likely to trespass upon another manufacturer's design or trade-mark if he had a better knowledge of what constitutes "unfair competition." Usually it is the lack of that knowledge, rather than malicious intent, that creates the fault. Knowing what is condoned or condemned by the Courts should, therefore, assist honest intentions.

It is natural to assume that a reasonable amount of difference in the design of packages and trade-marks should be sufficient to avoid trouble, but what is considered "reasonable" by some might prove the contrary in the light of decisions. To avoid the dangerous crossing of the border is largely a matter of common sense. The purpose here is to assist good judgment by some examples of citations in Court decisions. Some of these citations may not be perfect guides, but at least they point the way for broad guidance.

Package trespassing

The title "package" comprehends any container or covering, including wrappers and labels. Invasion of any of these is governed by the same simple underlying principles. The ruling question is whether the average buying public—known to be extremely lax in recalling the exact appearances of anything—is likely to be confused in normal purchasing. Having this one point well

in mind and following it literally will save much litigation. A mistake is often made in trying to compromise on minor changes in color schemes and other details which, when examined closely, might seem sufficient. The average person, however, usually does not examine objects closely, and often does not have the two packages side by side for comparison.

The origination of packages in the modern trend has created a fine art of distinctiveness and attractiveness, which offers wide latitude in the avoidance of similarities. Today, there is no valid excuse to cut corners in resemblances. Trade papers have greatly helped manufacturers to overcome the problems of infringement by publishing new patterns in design. This substantial service points directly to the marketing advantages of a package that is outstanding in its entirety. Such a package, in itself, assures immunity from involvement in infringements.

Color differences

While there can be no monopoly of colors as such, the abuse, not the use, of these eye-catching combinations is the seat of much trouble. There is a popular notion that the transposing of color features removes reason for complaint, overlooking the fact that where a dominating color gives exclusiveness to design, there is a property right in such exclusiveness. For instance, the fact that one package has a distinctive gold and black dress does not mean that others cannot use gold and black, except in so far as it affects the good-will of prior users. Virtually every suit on the grounds of "colorable imitation" finds the defendant inviting a Court opinion through lack of regard for this basic index.

Copyright legality

The benefits of copyright are well recognized. However, manufacturers commonly make the mistake of neglecting to apply for copyright at the legal time. That time is properly upon the first production of the package, wrapper or label, not just anytime in later years whenever the spirit moves. To wait until the goods have been on the market for a considerable period before obtaining the copyright certificate might prove a boomerang. If evidence proves non-compliance with the letter of the copyright law, the copyright might be held illegal and vacated in a Court test. Such lack of foresight can defeat an otherwise entirely meritorious case of alleged imitation.

Unfair competition

Under this sweeping head may be gathered a multitude of complaints, the most conspicuous and numerous being those that embody trade-marks as expressed by brand names. What constitutes trespassing in brand name only can best be illustrated by actual findings. When dealing with the three tests customarily applied—i.e., similarity of sound, appearance and meaning—these opinions usually are soundly rendered. When other distinguishing features are added, such as similarities in the actual package, together with representations

made in selling, either in the accompanying literature or by word-of-mouth, the cases become more complex. The more involved the issue, the greater the margin for doubt, unless the complaint is clearly justified to the most casual observer. Where there is a strong element of doubt, the Court wisely takes into account the measure of popularity created by the original claimant, and views the infringement in the light of probable damage to that established popularity. This is held to constitute unfair competition in the invested property.

Trade-marks held confusingly similar

"PEPTO SELTZER" and "PEPSIMIC SELTZER AMELOTTE": The Pepsodent Co. vs. Pepsimic Seltzer Co. (26, C.C.P.A.-1210, 103F [2d] 362). While "Pepsimic Seltzer Amelotte" is descriptive and is registered under the 1920 Act, the use of descriptive marks may form the basis of an opposition. This is distinguished from the "Alka Seltzer" vs. "Pepso Seltzer" case in that, here, the marks as a whole are confusingly similar.

"MEADOW GOLD" and "OLD MEADOW": Abell vs. Beatrice Creamery Co. (23, C.C.P.A., 735; 79F [2d] 751). The marks, except in the arrangement of the words and the absence of the letter "G" in appellant's mark, are identical; goods the same.

"DOBRY'S SUNSWEET" and "SUNSWEET": California Prune and Apricot Growers Assn. vs. Dobry Flour Mills, Inc. (26, C.C.P.A.-910; 101F [2d] 838). "Sunsweet" in appellee's mark printed in larger type than the word "Dobry's," the words being associated with a representation of the sun, all inclosed within an elaborate border. The Court said: "We have no hesitation in holding that the marks are confusingly similar, and that the appellant has been damaged by the registration of appellee's mark. To hold otherwise would make it possible for one to appropriate a trade-mark which, through extensive advertising, had become a household word, by adding thereto the name of an individual."

"SUNNY MIST" and "SUNKIST": Florida Citrus Growers Cooperative vs. California Fruit Growers Exchange (25, C.C.P.A.-963; 95F [2d] 512). Goods of same descriptive properties but specifically different, one being canned citrus fruit and juices for food purposes, and the other fresh citrus fruits and by-products. This decision turned on the similarity of sound of the two marks. Further, there was some similarity in appearance in the use of a large "S" in both marks.

"E-Z" and "KLAD-EZEE": E. Z. Mills, Inc., vs. Martin Brothers Co. (25, C.C.P.A.; 992-95F [2d] 269). While the marks, tested by appearance alone, are not confusingly similar, a very different impression is made when the sound is compared. That similarity in sound alone is sufficient to constitute confusing similarity between marks is well established.

"SOLVEX" and "NO-VEX": Albert I. Falls, doing business as Falls Chemical Company vs. The Scholl Mfg. Co., Inc., (24, C.C.P.A., 1308–90F (2d) 499). While it appeared that the word "Scholls" was printed on the opposer's labels as a prefix to the word "Solvex," the latter word was the dominant feature of such labels, and some purchasers would call for "Scholl's Solvex" others would ask simply for "Solvex."

Trade-marks not confusingly similar

"ALKA-SELTZER" and "PEPSO-SELTZER": Miles Laboratories, Inc., vs. The Pepsodent Co. (26, C.C.P.A.-1272; 104F [2d] 205). The arbitrary terms "Alka" and "Pepso" are the dominant portions of the respective trade-marks. "Seltzer," in each mark, is descriptive and, therefore, public juris, and cannot indicate origin.

"SPIRALATOR" and "ROLLATOR": Borg-Warner Corp. vs. Easy Washing Machine Corp. (26, C.C.P.A., 1256; 104F [2d] 1256). Goods specifically different (refrigerators and washing machines), but Court found it not necessary to determine whether or not they were goods of same descriptive properties, in view of wide difference in marks. "VAPEX" and "VICKS," or "VAPORUB": Vick Chemical Co. vs.

Thomas Kerfoot and Co., Ltd. (23, C.C.P.A.-752; 80F [2d] 73). "Vicks" and "Vapex" have only the initial letter in common and while they terminate with the same sound, they are clearly distinguishable in that one has only one syllable while the other has two. The Court quoted with approval the remarks of the Commissioner of Patents as to the difference between "Vaporub" and "Vapex," as follows: "As between "Vaporub" and "Vapex" the only similarity, either when written or spoken, is the first syllable, "Vap-"; and in view of the obvious differences it is difficult to comprehend how this one syllable in common would confuse."

Cumulative differences in marks and goods

"NEET" and "NEXT": Affiliated Products, Inc., vs. Crazy Water Co. (26, C.C.P.A.-1331; 104F [2d] 366). "Neet" used on depilatories and antiperspirants; "Next" used on shaving cream and shaving, toilet and bath soaps. Differences in marks and goods held cumulative in preventing confusion in trade, but goods held to be of the same descriptive properties. The Court said: "We have no doubt but that the involved marks, even though they may be made up of the same number of letters, and begin and end with the same letters, appear to the ocular sense in a quite different way."

"BUDGET SPECIAL" and "TETLEY'S BUDGET TEA" (Special and Tea disclaimed): Tetley and Co., Inc., vs. Bay State Fishing Co. (23, C.C.P.A.-969; 82F [2d] 299). The first is used on fish, variously put up; the other on rea. Court ruled that the goods are of the same descriptive properties but specifically different. "Taking into consideration the differences in the marks and the dissimilarity of the goods on which the respective marks are used," the Court held that concurrent use in trade of the two marks would not be likely to cause confusion.

"AEROLATOR" and "KELVINATOR": Kelvinator Corporation vs. Norge Corp. (Borg-Warner Corp. substituted) (25, C.C.P.A.-857; 94F [2d] 384). First used on air conditioning apparatus; second on refrigerators. Goods held to be of same descriptive properties, but specifically different. The suffix "-ator" is common to both marks and in the trade generally. It is not the dominating feature of either mark and the prefixe "Aerol" and "Kelvin" are quite dissimilar. The goods are comparatively expensive, "are purchased with a considerable degree of care and discrimination on the part of the purchaser . . . They are not a matter of every-day purchase upon the part of an individual like food products or other products that require frequent replacement."

"DICAL-D" and "DIAL": Ciba Pharmaceutical Products, Inc., vs. Abbott Laboratories; Society of Chemical Industry in Basle, vs. Same. (50 U. S. P. Q. 139; C.C.P.A. 7-2-41.) Goods probably of same descriptive properties but entirely different in character and uses. "Dial" is used as a dormative, sedative, or hypnotic while "Dical-D" is a preparation used to meet Vitamin D, calcium and phosphorous deficiencies. One "Dial" is sold over the counter in any drug store to any purchaser, while the other is sold only on a doctor's prescription. "The fact that both are medicinal in character and have a therapeutic effect on users, of necessity makes carefulness in selection imperative."

Infringement with unfair competition

"PEPTOMINT" and "PEP-O-MINT": L. P. Larson, Jr., Co., et al., vs. Lamont, Corliss and Co.; Same vs. Mint Products Co. (265-O.G.148, 257 Fed. Rep. 270). Appellant, Larson, registered in 1912 a trade-mark showing on an arbitrary design, the disclaimed words "Peptomint Gum," and re-registered the mark in 1915 with a disclaimer of the word "Mint" apart from "Pepto." In 1914 he notified the appellee, Lamont, that its use of a certain flavor-indicating mark, "Pep-O-Mint," infringed his mark "Peptomint." The evidence indicated that "Peptomint" was generally considered a corrupt spelling of "peppermint" and was so pronounced; that appellee did not imitate appellant's labels in any way nor make any attempt to palm his goods off as those of the appellant, was not guilty of unfair competition. In the Mint Products Co. case, appellant was himself guilty of unfair competition in changing his labels so as to imitate the display on appellee's labels, which through long and extensive advertising had acquired a secondary significance as indicating the origin of appellee's goods.

"CHIPSO" and "CHASE-O" (confusingly similar): The Procter and Gamble Co. vs. J. L. Prescott Co. (22, C.C.P.A.-1173; 77F [2d] 98).

Appellant's (Protter and Gamble's) registration ordered canceled. Appellee established prior use and the Court held that there was a likelihood of confusion in trade at the time appellant's mark was registered and that such mark should therefore not have been registered at that time. It was not necessary that the appellee, petitioner, establish actual confusion in trade. Furthermore, it was not material in this proceeding that the appellee, after the registration of appellant's trademark, changed both the design of its carton and the composition of its product to make them more nearly like those of the appellant. All questions of appellant's right to use its mark and of unfair competition were disregarded, the only question properly before the Court being that of appellant's right to register. Said the Court: "The question of simulating the size and color of packages is a subject matter which belongs to domain of unfair competition. We are not concerned with it here."

Unfair trading

There is no unfair competition merely because plaintiff's and defendant's containers are similarly colored where they do not look much alike and defendant places its name on its containers. Taylor Instrument Co. vs. Fee and Stemwedel, Inc. (District Court of N. D. of Ill., 5-6-41).

Where an arbitrary word used as a trade-mark for certain fruits had acquired a secondary significance as indicating origin in the plaintiff, defendant's sur of the same word in connection with fruit juices constituted unfair competition. California Fruit Growers Exchange, et al., vs. Windsor Beverages, Ltd., et al. (48, U.S.P.Q.608; 2-28-41-CCA-7th Circuit Court).

Where defendant adopted a label with the same blue border and red script of the wording, the only difference being in the brand names and those having the same significance, the differences were submerged in the more prominent features of the label which were copies, and defendant was guilty of unfair competition. Kraft-Phenix Cheese Corp. vs. R. E. Robertson, Inc. (25, T.M.Rep., 119; U.S.D.C., East. Dist. of Ill., 12-14-34).

Where defendant had so simulated in coloring and marking the caps, cartons and labels of the plaintiff as to mislead the purchasing public, he was guilty of unfair competition, even though he did not infringe plaintiff's trade-mark. Simulation amounting to unfair competition does not reside in identity of single features of dress or markings nor in indistinguishability when the articles are set side by side, but is tested by the general impression made by the offending article upon the eye of the ordinary purchaser or user. If the general impression which it makes when seen alone is such as to lead the ordinary purchaser to believe it to be the original article, there is an unlawful simulation. Cheesebrough Mfg. Co., Consolidated vs. Old Gold Chemical Company, Inc. (25, T.M.Rep, 149; U.S.C.C.A., 6th Circui: Court, 4-13-34).

The facts that defendant adopted a tin-foil wrapper for its cheese and that its labels are in triangular shape does not convict it of unfair competition where the plaintiff had previously adopted a similar wrapping and similarly-shaped labels, such wrapping and shape of labels being public property. Wm. Faehndrich, Inc., vs. Wheeler Riddle Cheese Co., Inc. (19, T.M.Rep., 356; U.S.D.C., East. Dist. of N. Y., 1929). Defendant's use of the trade-mark "Gold Mark" for hosiery on labels having similar colors and stripes as those upon which plaintiff displayed its trade-mark "Gold Stripe," was obviously unfair competition as well as trade-mark infringement. Court held it was no test of infringement that the ordinary purchaser could discern dissimilarities between plaintiff's labels and symbols and those of the defendant, when they are placed side by side. The test was whether the similarity was such that it would mislead the ordinary observer or purchaser. Gotham Silk Hosiery Co. vs. Reingold (210 N.Y. Sup 38; 15 T.M.Rep. 368.)

Where no fraudulant intent was shown, it was not unfair competition for defendant to put out toilet preparations in combination gift boxes, generally much like those of the plaintiff in size, shape and color of cartons or boxes, no one feature of the box being exactly like that of plaintiff. Both were limited, by public taste, in their selection to containers of delicate coloring, the inscriptions being different but inconspicuous. The general rule is that neither use of same colors aor of same form of containers, cartons or labels constitutes unfair competition, when such features are in common use in the trade, especially when they serve purposes of utility, convenience or attraction. (U.S.D.C.-27T.M. Rep. 554—approved by C.C.A. 3rd Circuit Court, 39 U.S.P.Q. 86.)

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Wood pulp in the paperboard industry

by J. D. Malcolmson

OOD is made up in about equal quantities of two principal ingredients, cellulose and lignin. The cellulose consists of tiny individual fibres which are tough and flexible and almost white in color. Cotton is cellulose in almost pure form. Lignin is a darkcolored cement which binds these fibres together and gives wood its hardness and structural strength. Lignin is of no value to the paper maker and must be cooked out and discarded in order to make available the valuable cellulose fibres. There are only a very few chemicals which will cook this lignin out economically without injuring the cellulose.

Wood pulp is classified according to the manufacturing method by which it is produced. The two principal classifications are: 1. Groundwood or Mechanical

Pulp; 2. Chemical Pulp.

Groundwood pulp: Groundwood pulp is produced by grinding a peeled log against a revolving stone (natural or artificial). This constitutes the lowest quality of pulp manufactured because of the inferior strength, short length, stiffness of the fibres and impurity of the pulp. These bad qualities are due to the retention of all of the lignin. It is generally used in conjunction with some other longer-fibred pulp and finds its greatest use in the manufacture of newsprint, tissues, paperboard, and cheap magazine and pad papers. Picnic pie plates are 100% groundwood. Newsprint is about 85% groundwood. The yellowing and loss of strength of newsprint with age is due to the lignin in the groundwood. Occasionally the wood is steamed before grinding, which causes a better separation of the fibres. The woods commonly used are spruce, hemlock, balsam, fir, aspen, poplar, and willow.

Chemical pulps: Chemical pulps are produced by cooking the wood which has been reduced to chips about an inch square, in large metal digesters with chemicals under high heat and pressure. This serves to separate the cellulose (or pure fibres) from the lignin and other impurities. The impurities are dissolved in the cooking liquid and the degree of cooking determines the purity and also the physical characteristics of the pulp. Any of the chemical pulps may be bleached, which consists of whitening the pulps by the use of a bleaching

chemical.

There are three principal kinds of chemical pulp.

(1) Soda Pulp is cooked with a solution of caustic soda (sodium hydroxide). It is a weak, soft, pure pulp used largely in book and magazine papers. It is seldom used in the manufacture of paperboard except for a small amount in the top liner of white patent-coated board. The woods commonly used are spruce, hemlock, aspen. Sulfite Pulp is an acid pulp, produced by a liquor which is a mixture of the bi-sulfites of

calcium and magnesium. This pulp, which combines very high purity with good strength, is used in high-grade writing papers, book papers, folding boxboard, tissues, and also as the base for artificial silk and plastics. The "white patent coated" surface of folding boxboard is mostly bleached sulfite. Woods used in making this are the same as for soda pulp.

(3) Sulfate Pulp is an alkaline pulp produced by gentler cooking with a mixture of caustic soda (sodium hydroxide) and sodium sulfide. It is stronger but less pure pulp, containing enough lignin to add cementing matter. Kraft Pulp is an under-cooked sulfate pulp which is the strongest but the most impure sulfate pulp. Considerable success has been enjoyed recently in bleaching rather well-cooked sulfate pulp to make a very strong and very white sheet, with better bending qualities than sulfite stock.

Bleached sulfate is often used for the topping on corrugated liners or for sheet-lined board, but not for white patent coated board. The principal woods used are long-fibred conifers such as jack pine, southern pine, spruce, cypress, redwood,

and larch.

Principal paperboard products of wood pulp

Paperboard is made as much as possible of old papers: Old papers contain the same fibres as new pulp yet they are cheaper. New pulp is added in sufficient proportion to bring the strength, bending quality and color up to the required standard. Because of the many grades of waste papers and pulp, and the multi-cylinder construction of a board machine, it is possible to produce an almost infinite variety of boxboards. Among the most common are the following:

Chip: Made up almost entirely of mixed papers. Occasionally stronger fibres are added to produce Test Chip. The filler of most vat lined paperboards is chip.

News: Made of old newspapers. The gray color is due to disseminated printer's ink. News is usually used as the inner surface of other boards (e.g., "White patent coated news back"). Occasionally boards are made of

Manila: Name derived from manila rope fibres, but manila today contains no rope fibres. Boards and papers are still made of these fibres but the product is called "rope paper." Manila has come to mean a yellowish sheet containing 50% or more of groundwood.

Non-bending manila: About 2/3 groundwood, 1/3 unbleached sulfite, plus some yellow dye.

Bending manila: The same except that the proportions are about 50-50.

Bleached manila: The same as the two listed above except that the yellow dye is omitted and some blue and red are added to neutralize the yellow of the groundwood.

White patent coated: Usually has a top liner made of bleached sulfite pulp, unbleached sulfite pulp, and some soda pulp. Waste paper from envelope factories, etc. (known as hard white shavings and soft white shavings), are substituted for the more expensive sulfite pulps wherever possible. The filler is usually chip.

Manilas: Patent coated and other grades can be colored in the beater (beater color) or on the calender (calender stain). They are then called yellow patent coated news, orange calender stained manila, etc.

Mist board: Usually has top of news, or news and sulfite to which has been added some dyed kraft fibres.

Solid boards: Usually have a more expensive filler than chip. Examples are *Solid Sulfite* and *Solid Manila* (groundwood). Solid boards often have a top liner different from the filler such as *White Patent Coated Solid Manila*.

Container boards: More attention paid to strength than to color whereas *Folding Box Boards* (listed above) are more concerned with appearance and bending quality. **Test liners:** Used on corrugated and solid fibre shipping containers must meet official Mullen test.

Jute liners: Test liners made from re-worked papers plus enough new pulp (usually kraft) to meet the re-

quired specifications on strength. Most of the new kraft pulp is concentrated on the outer skin or "top liner," and on the second layer or "under liner."

Kraft liners: Made of solid new kraft pulp, they are lighter in weight than jute but more expensive per ton. Fourdrinier kraft liners: Made on a single wire screen and have no vat lined formation. They are lighter in weight than "Cylinder Kraft Liners." Dry Finish Fourdrinier Kraft Liners are lighter in weight than Water Finish Fourdrinier Kraft Liners.

Filled kraft liners: Intermediate between Jute and Cylinder Kraft in that they contain $^3/_4$ or more of new kraft pulp. The term is indefinite.

Corrugating sheets: Usually .009 thick and made of a variety of raw materials, the most popular of which are wheat straw and solid kraft. *Mill Straw* consists of high-grade stock chemically treated to increase rigidity.

None of the above sheets contains adhesive, their only lamination being the plies of the vat lined sheets made on a cylinder machine. They can be combined with adhesives to other sheets to form an almost endless variety of combined products such as solid fibre-board, corrugated board, pasted chip, sheet-lined boards, caddy board, wallboard, etc.

Boxboard: types and selection

by Grafton Whiting

OLDING cartons and set-up boxes are made from boxboard manufactured on a multi-cylinder paper machine. The function of this machine is to draw a film or web of fibres from each cylinder (usually 5 to 8 cylinders) and, by subsequent pressure, to form a compact sheet. Each cylinder turns in a vat supplied with the raw stock (about 1 per cent fibre and 99 per cent water) from which the board is to be made. This supply may consist of fibres reclaimed from waste paper, or of virgin pulp fibres, or a mixture of these according to the specifications of the board to be produced. The first and last cylinders form the two outside liners or surfaces of the board, while the remaining cylinders produce the filler, or inner plies. The thickness of each ranges from .002 of an inch upward, depending upon the adjustment of the machine.

Since any type of fibre may be furnished to the cylinders, and each cylinder forms a part of the construction of the board, a wide variety of boxboards can be made.

There are certain grades of board in common use for folding and set-up boxes, made of different materials and different thicknesses, dependent upon the size and style of the box and the use to which it will be put. The thickness or caliper is expressed in thousandths of an inch—termed "points"—and ranges from .012 to .065 of an inch.

Table 1 (page 50) lists these grades, together with the

caliper range and in general the materials from which they are made. Waste papers, the chief source of raw material, are sorted into many classes, each commanding a different price, according to the fibre content. Papers containing strong, white fibres bring the highest price and from there, range downward to mixed papers, the lowest class. Pulp, although the average use is less in volume, is an important element in many furnishes in producing the quality and surface effect required. There are three kinds of pulp in common use; namely, sulfite, sulfate or kraft, and groundwood. These may be unbleached or bleached and prices vary accordingly.

Boards

SOLID BOARDS: A general term indicating that the board is made of the same material throughout.

FILLED BOARDS: A board with inner plies of a stock different from that of the outer plies or liners.

PASTED BOARD: A board made of two or more sheets of board or of board and paper pasted together by a subsequent operation.

VAT LINED BOARD: A board made on a cylinder machine where the first or last cylinder vat is supplied with a quality of stock different from that in the other vats. Double vat lined board requires that both the first and last vats contain different stocks.

Color

Manila: A term used to indicate a color (yellowish) and appearance comparable to that formerly obtained when manila hemp (rope) was used.

BEATER COLORED: The coloring material is added to the paper stock before entering the cylinder vat, thus impregnating the whole ply.

CALENDER COLORED (or stained): The coloring material is applied to the surface of the board as it passes through the calender stack, thus coloring the top but not necessarily permeating throughout the ply.

Chemicals

Various chemicals, such as rosin and alum for sizing, are used in making boxboard to prevent the penetration of moisture. Starch is used for hardening and stiffening. Loading material, such as clay, is also used. Emulsions, such as asphalt for water-proofing, and dyes and pigments for procuring the desired color, are also employed. With these applied to the paper stock, any one or all of the plies may receive a specified treatment to suit individual requirements.

Finish

DRY FINISH: The finish obtained when board passes through calender stack without special treatment.

WET FINISH: The surface of the board is subjected to a water or steam bath in passing through the calendar, which gives it a smoother finish. This is somewhat similar to dampening cloth before pressing.

Surface Treatment: Treatment of the surface of the board may be made at the calender either before passing through the stacks or as some step in the operation. For example, silicate is applied to the board to prevent penetration of grease in the packaging of foods. Starch or other sizing is used to give a smoother finish for certain types of printing. Paraffin or wax is applied as a water-proofing agent where the board is to be used for the packaging of liquids or semi-liquids. It is common practice in folding-box plants to coat with paraffin or wax for this same purpose.

Standards

Standard rules and regulations have been adopted by the National Paperboard Association, representing the manufacturers of folding and set-up boxboards.

The basic facts for establishing the standards, and other information, were obtained from investigations of practices in large and small boxboard mills scattered over a wide area. Following this survey, conferences were held by makers of board, fabricators of folding and set-up boxes, and consumer organizations, and there a series of standard gage lists was evolved; also a set of definitions which met with general approval. These gage lists are identical with Simplified Practice Recommendation R44-36, entitled Box Board Thicknesses (United States Department of Commerce; effective December 31, 1936). The set of definitions and the gauge lists are as follows:

STANDARD SIZES: In all grades, a sheet 25 in. by 40 in., containing 1,000 sq. in.

Patent coated or manila boards (Lists 6 to 8) are also shown in sizes 24 in. by 36 in., containing 864 sq. in. and 28 in. by 44 in., containing 1,232 sq. in. The standard sizes are used as bases for all computations.

STANDARD PACKAGE: In patent coated or solid manila board, a ream of 500 sheets.

These grades are sometimes packed, for convenience, in fractions or multiples of a ream, depending upon the size of the sheet.

BUNDLE: A unit containing 50 lbs.

The quantity of sheets varies with the size and the caliper, but the weight of 50 lbs. of board is fixed.

REGULAR NUMBERS: The quantity of standard sized sheets (25 by 40) of boxboard required to make a bundle of 50 lbs.

COUNT: The quantity of odd-sized sheets required to make a bundle.

For the standard size (25 by 40) the count would be identical with the Regular Number; therefore it has become the custom to use the term Count to apply only to odd-sized sheets and Regular Number to standard size. The count for an odd-sized sheet is found by dividing the area of the corresponding Regular Number by the number of square inches in the odd-sized sheet.

FINISH: Four standard finishes designated as Numbers 1 to 4, from lowest to highest.

The degree of finish is regulated by the pressure exerted on the calenders under which the board passes. The pressure determines the density of the sheet. The resulting surface is incidental, but it becomes smoother as calender pressure is increased.

- No. 1—Light pressure: results in rough surface and low density. It gives large sheetage for its weight; i.e., greatest area to pound of board.
- No. 2—Medium pressure: fair surface and sheetage.

 Popular for ordinary printing and general
 utility purposes.
- No. 3—Heavy pressure: smooth surface and low sheetage. Used largely where better printing surface is required.
- No. 4—Heaviest pressure: extra smooth and slick surface, dense body and firm compact fibres. It has the lowest sheetage.
- Rough—Smooth: Where but two finishes are used, these relative terms designate light or heavy weight board in caliper points.

DIMENSIONS: Width in inches given first, then length. Width is the measurement across the machine, i.e., space between knives in the slitter. Length is always the measurement in the direction of the grain, i.e., space between cut-offs.

BENDING: Any board which, when properly scored and folded, shows no break in the outer fibres.

Gage Lists

In the accompanying tables Gauge Lists 1 to 6 give in the first column the Regular Numbers or quantity of

standard sized sheets in a bundle weighing 50 pounds. The figures in the other columns give the caliper (decimals of an inch) when made with the finish indicated.*

Thus Gage List No. 1, first line, column 1, shows Regular Number 35, meaning 35 standard sized sheets to the bundle. Column 2 gives the caliper of .065 in. as the thickness of No. 1 finish; column 3, .061 in. for No. 2 finish; and so on.

Gage List 6 states the caliper in the first column, and to the right of it, the weight of a ream of 500 sheets. Three sizes of sheets are listed with the corresponding

The weight per M Sq. Ft. is also shown on each list.

Special surfacings

Boxboard is taken from the paper machine either in rolls or in sheets, cut to specified size, and may be further proc-

No. 1 Gage List-Non-Bending Boards

- 1. Plain Strawboard. Plain Chipboard.
 Filled Wood Pulp.
- 4. Filled News Board.
- Single News Vat-Lined Chip.
 Single White Vat-Lined Chip.

Regular	Jumber Lib. Bdl. 1 2 Quan. Inch Inch 35 .065 .061 40 .057 .054 45 .051 .048 50 .046 .043 55 .041 .038 66 .035 .032 70 .032 .030 75 .030 .028 80 .028 .026 85 .026 .024 90 .024 .022 95 .023 .021	H		Weight		
50 Lb. Bdl.		2	3	4	M Sq. Ft	
Quan.	Inch	Inch	Inch	Inch	Lbs.	
35	.065	.061	.058	.052	206	
40	.057	.054	.051	.046	180	
45	.051	.048	.046	.041	160	
50	.046	.043	.041	.037	144	
55	.041	.038	.036	.033	131	
60	. 038	.035	.033	.030	120	
65	. 035	.032	. 030	.028	111	
			.028	.026	103	
75	. 030		.027	.024	96	
			.025	.023	90	
			.023	.022	85	
			.021	. 020	90	
			.020	.018	76	
100	.022	. 020	.019	.017	72	
110	.019	.018	.017	.016	65	
120	.017	.016	.015	.014	60	

No. 2 Gage List—Bending Boards

- Single Manila Lined Chip.
 Bleached Manila Lined Chip.
 Double Manila Lined Chip.
 Colored Boxboard Chip Back.
 Bending Chipboard.
 Colored Suit Box Chip Back.

- 7. Mist Color Suit Box Chip Back. 8. Cracker Shell Board. 9. Solid Jute.

- 10. Any combination with Chip, News or Pulp Back.

Regular	Number		ISH		Weight			
50 Lb. Bdl.	The last color The	3	4	M Sq. F				
Quan.	lan. Inch Inch 40 052 049 45 047 045 50 042 040 55 038 036 60 035 033 65 031 030 70 029 028 75 027 026		Inch	Inch	Lbs.			
40	.052	.049	.047	.045	180			
45	.047	.045	.042	.040	160			
50	.042	.040	.038	.036	144			
55	.038	.036	.034	.032	131			
60	. 035	.033	.031	.029	120			
65	.031	.030	.028	.026	111			
70	.029	.028	.026	.024	103			
75	.027	.026	.024	.023	96			
80	.025	.024	.023	.021	90			
	.023	.022	.021	.019	85			
	.021	.020	.019	.018	80			
	.020	.019	.018	.017	76			
100	.019	.018	.017	.016	72			
105	.018	.017	.016	.015	69			
110	.017	.016	.015	.014	65			
120	.016	.015	.014	.013	60			

^{*} Published by courtesy of the National Paperboard Association.

No. 3 Gage List-Solid News Solid Wood Pulp

50 Lb. Bdl.	1	2	•					
0	Quan. Inch Inch 40 .061 .058 45 .054 .052 50 .049 .047 55 .045 .043 60 .041 .039 65 .038 .036 70 .035 .032 75 .032 .031 80 .030 .029 85 .028 .027	3	4	M Sq. Ft.				
Quan.	Inch	Inch	Inch	Inch	Lbs.			
40	.061	.058	.053	.049	180			
45	.054	.052	.048	.043	160			
50	.049	.047	.043	.039	144			
	. 045		. 039	.035	131			
			.036	.032	120			
			. 033	.030	111			
			.031	.028	103			
			.029	.026	96			
			.027	.024	90			
			.025	.023	85			
90	.027	. 025	.023	.021	80			
95	.025	.024	.022	.020	76			
100	.023	.022	.021	.019	72			
110 120	.021	.020	.019	.017	65 60			

No. 4 Gage List-Pasted Chip

Regular	FIN	NISH	Weight		
Quan. Inch	Rough	Smooth	M Sq. Ft.		
Quan.	Inch	Inch	Lbs.		
10	.216	. 206	720		
15	. 144	. 138	480		
20	.108	. 103	360		
25	.086	.081	288		
30	.070	.065	240		
35	.060	.058	206		

No. 5 Gage List—Pasted Solids News Board

Regular	FIN	VISH	Weight			
Quan. Inch	Rough	Smooth	M Sq Ft.			
Quan.	Inch	Inch	Lbs.			
10	. 233	. 196	720			
15	. 156	.130	480			
20	.117	.098	360			
25	.094	.078	288			
30	.078	. 065	240			
35	.066	. 056	206			

No. 6 Gage List and Ream Weight Table Patent Coated and Solid Manila Board

- 1. Patent Coated, Solid Manila 4. Patent Coated, Chip Back.

 Back.

 5. Patent Coated, Blue or Color Back. 5. Patent Coated, Blue 2. Patent Coated, News Back. 3. Patent Coated, News Center, 6. Solid Manila Board.
- Manila Back.

Caliper	WEIGH	T PER 500	SHEETS	
of Indi- vidual Sheets	Indi- dual 25 × 40		28 × 24 (1232 Sq. Ins.)	Weight per M Sq. Ft
Inch	Lbs.	Lbs.	Lbs.	Lbs.
.011	178	154	219	51
.012	194	168	239	56
.013		182	260	61
.014	219	189	270	63
.015	226	195	278	65
.016	241	208	297	69
.018	266	230	328	77
.020	284	245	350	82
.022	306 333	264 288	377 410	88 96
.024	361	312	445	104
.028	389	336	479	112
.030	417	360	514	120
.032	444	384	547	128
.034	472	408	582	136
.040	556	480	685	160

of

TABLE 1-Grades of Boxboard

GRADES		FURNISH												
	Caliper	Waste	Papers											
	Range in Inches	Mixed Papers	News	Ground wood			Sulphite	Kraft	Ground wood	Clay	Price Index			
FOLDING						~								
Chip (bending) Mist Gray Suit Board Manila Lined Chip Bleached Manila Lined Chip Kraft Board White Patent Coated News Clay Coated Board Bleached Sulphite Board	.012050 .020040 .012050 .012050 .012050 .012028 .012028	x x x	x x x x	x x	x	x x x	x x x	x	x x	x	110 130 130 140 130 160 220 250			
SET-UP Chip (non-bending) News Vat Lined Chip Filled News Solid News White Vat Lined Chip	.016065 .016065 .016065 .016065	x x x	x x x	x	x	x x	x		x		100 105 110 115 130			

NOTE: The proportion and selection of raw materials in a furnish may vary depending on availability of supply and quality required. Price index is based upon chip (non-bending) equal to 100%. The relation of other grades is only typical since the several materials entering into costs vary independently.

TABLE 2—Types of Boxes

BOXBOARD GRADES	Butter Boxes	Candy Boxes	Cereal Cartons	Cigarette Cartons	Cosmetics	Drugs (bottled)	Dried Fruit Cartons	Eggs (local delivery)	Envelopes (Stationery)	5-Cent Candies	Florists' Boxes	Frozen Foods	Hardware	Ice Cream	Jewelry Boxes	Liquor (bottled) Cartons	Milk Bottles	Salt Cartons	Shoe Boxes	Soap (flakes)	Sausages, Bacon, etc.	Suit Boxes	Stocking Boxes	Tooth Paste Cartons	Vegetable and Fruit Cartons
Chip (bending) Mist Gray Suit Board Manila Lined Chip Bleached Manila Lined Chip Kraft Board White Patent Coated News Clay Coated Board Bleached Sulphite Board Chip (non-bending) News Vat Lined Chip Filled News Solid News White Vat Lined Chip	ā	C	x x x	x	x x	x	x b	x	x x	x	x x	b	X X X C	b	c x	×	b	b	x C C	aaa	aaaa	x	CC	x	b b

a—grease proof, b—water proof, c—lined with cover paper.
 NOTE: The boxboard selected for any type of product may vary from a high to a low grade depending upon the service required of it, the price, and the degree to which the sales appeal in the appearance of the package is a factor in the merchandising policy.

essed to give a special type of surface. Where the equipment is so arranged, some of these operations may be continuous with the paper machine while others are treated in a separate division. Following is a description of some finishes:

CLAY COATED: Clay, with casein as an adhesive, is applied as a coating to boxboard and, with subsequent calendering, produces an excellent color and brightness. It is the highest standard grade of board and is used largely for the better quality of folding cartons.

Grained: An imitation oak, leather, marble, or other finish may be given to a boxboard by passing it through printing cylinders appropriately engraved.

LINED OF PASTED: Any boxboard may be pasted to another or lined with a plain or fancy cover paper, parchment, glassine, or other material, either in the roll or in sheet form. Asphalt, properly prepared, or other adhesives, may be used to make the board practically waterproof. Pasted board may be built up to any desired thickness and made to serve a number of uses.

Table 2 shows general types of boxes (column headings) and the grades of board (at the left) from which they may be made. Such a statement is necessarily based upon averages, since styles of boxes vary the same as styles in clothing, and poorer or better grades may be supplied to meet the desire of the buyer.

Folding and display cartons

HE most notable characteristic of the folding carton or folding paper box is its infinite variety. Literally hundreds of variations in style and construction have been developed to meet the merchandising needs of the great assortment of products packaged in these containers. However, the 72 illustrations in this section cover all the important styles. Because of patent restrictions not all of these can be manufactured by any one company. Patented cartons have been so designated, and information on the patent for any given box can be procured from the regular box manufacturers.

In addition to styles in construction, other factors offer the user of carrons a wide choice. Board, for example, comes in a variety of grades, colors and thicknesses, as described elsewhere in this catalog. The carton may be printed in a number of colors by either letterpress or lithography. Special treatments either of the board or of the printed carton may give it specially desired characteristics. Varnish, lacquer, paraffin or cellulose film may be applied or the board may be embossed. The manufacturer of cartons is in a position to explain these processes and advantages in all details and to recommend desirable decorations.

Specification data

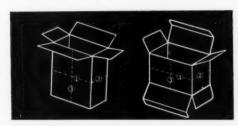
Purchasers can avoid much trouble by giving complete information at the earliest opportunity. The following points should be specified:

- (a) Stock: Specific description of type of board to be utilized
- (b) Caliper or thickness of the board
 (c) Dimensions: This, of course, is of vital importance. The proper method is explained under "Basic Styles" below
- (d) Engravings (whether furnished by purchaser, on hand, or to be made and billed as an extra charge by the box maker)
- (e) Colors: Specific naming of colors, preferably by some one of the standard systems, with mention of any peculiarities in use, such as fastness to sunlight or exposure to alkalies
- (f) Printing (whether letterpress or lithography)
- (g) Copy and proofs (including opportunity to check them before final printing)
- (h) Surface protection (i.e., varnishing, lacquering)(i) Packing and method of marking container to
- facilitate inventory and factory re-use (j) Delivery or shipping instructions

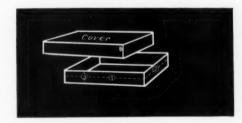
Basic styles

All folding boxes are derived from three basic types as illustrated below; the numbers on each diagram show the proper method and order of specifying dimensions. This method is recommended by the Folding Paper Box Association of America. All measurements should be on the inside of the box:

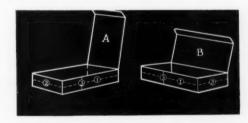
A. End opening: Basically a tube with one or both ends folded and sealed, locked or tucked to form closure.



Tray: A container, open on one plane, formed by folding up a sheet of board to make side panels; then gluing or locking the corners in place. Most two-piece boxes are two trays fitted together.



C. Top opening: Similar to the tray except that one side panel is extended and folded over to cover the open plane; it may be tucked locked or glued to form the closure.



Each of the illustrations on the following pages comprises two panels. At the right is the photograph of a completed carton, exactly as it would appear in use. At the left is a photo-diagram of the same carton, flat and unprinted, showing its construction and proportions. The solid lines indicate lines for scoring edges; dotted lines indicate perforations or scores intended for tearing or opening of the container; cross hatching indicates glued seams. All diagrams are photographed against a one-inch scale.

The various styles are arranged under the three classes described above. In addition, there are illustrated some two-piece boxes, each of a different basic type; several styles of carriers for bottled beverages; and a number of display stands. (Please turn to page 54)

SURVIVAL OF I



THE

TETTEST

The dinosaur was big and strong—but there wasn't enough food around to feed him and all the other large animals of his time. So, today the only relics of his existence are to be found in museums and libraries.

The old jungle law of "the survival of the fittest" has some reflection in business, too. Only it's not competition that determines the survival of a firm so much as it is ability to meet the needs of the day.

Today, Burt is one of the largest boxmaking firms in the world. We were not always so. When our business started more than a half-century ago, we were rather a small outfit. But large enough to meet the marketing requirements of the time.

Our present large capacity has been built gradually during the years to meet the needs of our customers. Today, we supply some of the largest packagers with their set-up paper and transparent boxes, their folding and display cartons. We have built our own automatic machinery to make packages of these types rapidly, uniformly, economically and of consistent high quality.



E.N. BURT COMPANY, INC.

500-540 SENECA STREET, BUFFALO, N. Y.

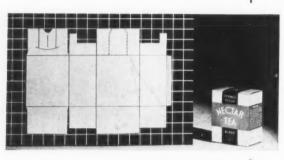
NEW YORK CITY · PHILADELPHIA · BOSTON ST. LOUIS · ATLANTA, GEORGIA · CHICAGO CLEVELAND · CINCINNATI · NEW ORLEANS MEMPHIS · MINNEAPOLIS · KANSAS CITY DANVILLE, CALIFORNIA (Near San Francisco) A. G. Spilker, P. O. Box 126, Telephone: Danville 27

CANADIAN DIVISION: Dominion Paper Box Company, Ltd. 469-483 King Street, West, Toronto 2, Canada

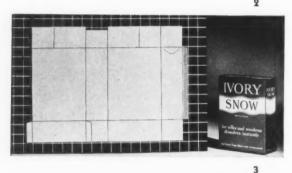
CLASS A



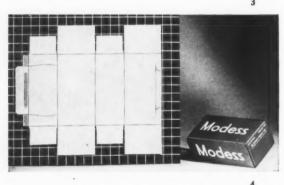
1. SEAL END CARTON. The most popular style carton for packing flour, cereals, sugar, salt, teas, coffees, spices, soap powders and a wide variety of products. Readily packed on high-speed automatic machinery but difficult to seal by hand.



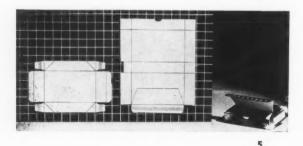
2. SEAL END CARTON WITH POURING SPOUT. Seal end carton, same construction as No. 1 with the additional feature of the patented pouring spout. This pouring spout makes it possible to dispense contents easily without spilling and affords a means of re-closing.



3. SEAL END CARTON for automatic packing and sealing. It is similar to No. 1 except that it has incorporated in its construction additional flaps on the bottom of the carton to prevent sifting. This carton is particularly suited for products which are milled or pulverized to such a degree that particles would sift through the regular seal end carton. This carton also has a unique pouring spout, which is formed by breaking the perforations in the top of the side panel. Patented.

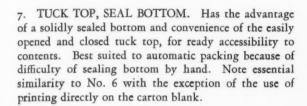


4. SEAL END BROADSIDE OPENER STYLE. An interesting development in a seal end carton which permits inexpensive, automatic filling through the ends of the carton which are later securely sealed. Carton is opened on the broad side, hence the name "Broadside Opener." Patented.



5. TWO-PIECE BROADSIDE OPENER. This is a variation of style No. 4 and is primarily used for the packaging of small pieces such as cube sugar. The individual pieces are first packed into the tray which is then easily inserted through the end of the outer carton. The outer carton is sealed automatically. The consumer can readily open the carton by breaking the spotted glue seam and tearing perforations. The container can be re-closed by the consumer by treating the hinged opening as an ordinary tuck flap. Patented.

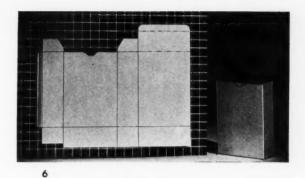
6. TUCK TOP SEAL BOTTOM SHELL WITH TIGHT WRAP. Consists of a plain shell, often made of chip board, completely covered by a printed wrapper. Widely used for cereals and crackers. Requires automatic machine equipment. Outer wrapper prevents sifting, air deterioration and contamination from insects or dust. Newest development is to paraffin the printed side of wrap to give added protection to product. Wrap may be glued solidly to all six surfaces of the carton or "spot glued" at certain points.



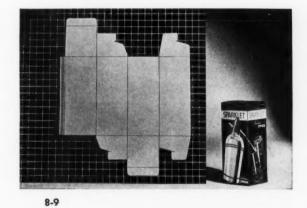
8. REVERSE TUCK CARTON. The most widely used of all carton styles for low-priced articles of all kinds. Easily set up by hand and adaptable to automatic packing. Convenient to open and close and exceedingly economical in manufacture because cartons interlock. This style not suited for heavy products, which must be held securely in the carton and require some positive means of locking the end tucks, or for powdery products, such as flour, salt and sugar, which are likely to sift through and thus require a seal end carton. Ready accessibility and low cost make this style carton ideal for five- and ten-cent units of candy, such as cough drops, as well as shaving creams and tooth paste in tubes. Type illustrated has special locking side flaps. See description No. 9 below.

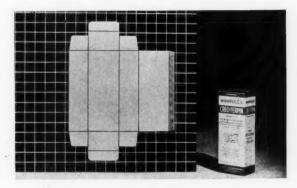
9. REVERSE TUCK CARTON WITH ARTHUR LOCKS. Side flaps, top and bottom, or just the bottom, lock to prevent heavy contents from breaking through. Used principally for packing jars and bottles containing toilet preparations, medicines and condiments, which must be held securely in the carton.

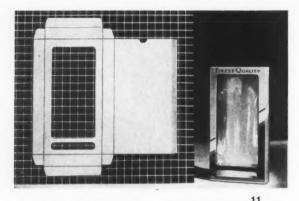
10. STRAIGHT TUCK CARTON. This carton has no advantage over reverse tuck carton, but is required and extensively used with high-speed automatic cartoning machines. Must be made with right and left glue seams to secure economy of interlocking for economical manufacturing. Serves as an effective and satisfactory low-price package for the same large variety of products using the regular reverse tuck carton. When used for products packaged in glass bottles, it is advisable to equip the bottom flaps with a positive locking device to insure against the possibility of the bottle falling out of the carton. Inserts or corrugated liner may be used for added protection of the product.



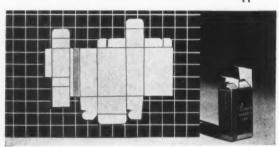




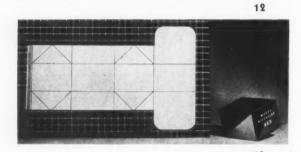




11. STRAIGHT TUCK CARTON WITH TRANS-PARENT CELLULOSE WINDOW. Contents of this package fully protected from soilage yet visible to consumer through transparent window. Cellulose may be applied to die-cut portion only or the carton may be laminated over-all. See Laminated Cartons, page 88.



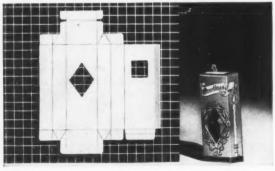
12. STRAIGHT TUCK CARTON, "2 in 1" STYLE. Patented carton made with an inside divider which, when folded into position, forms two separate compartments. Made in one piece, delivered in conventional knocked-down form. An ideal carton for a combination sale, such as a shampoo and a hair tint, or a bottle with medicine dropper or dispensing unit.



13. BELLOWS END CARTON, Web end construction forms a strong and tight end closure by hand assembly. Carton may be opened and tightly re-closed at will. Note simplicity of construction. Web end construction provides substantial protection against sifting when granular or crumbling products are packed in this type of carton.

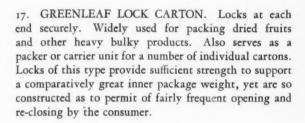


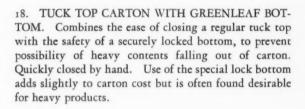
14. TRIANGULAR STRAIGHT TUCK. This novel shape carton is easily assembled and filled by hand. Its shape and location of transparent window makes an unusual display of contents. In packing, alternate layers of cartons are reversed so that window portions are protected by the side walls of the cartons they rest upon. Note how rear wall (i.e., wall immediately opposite die-cut window) is scored to permit the pasted carton to be shipped flat.



15. RECTANGULAR CARTON: TUCK TOP AND LOCK BOTTOM. Same as Style No. 16 except that it can be made for flat or rectangular shaped products. The diamond shape and the rectangular die-cut walls found on the front and back faces of the unit here shown are designed to permit the display of labels on the inner container to meet merchandising or legal requirements. Patented.

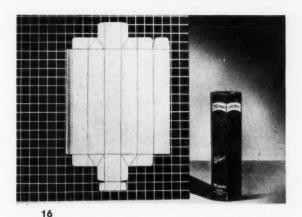
16. HEXAGONAL CARTON: TUCK TOP AND LOCK BOTTOM. A patented carton that combines novelty with ease and speed of setting up. Quick-closing top requires only a single tuck or flap, while the Hibson lock bottom insures a permanent seal. Capable of holding the weight of a comparatively heavy inner package, such as a bottle of wine, liqueur or any other product packed in glass. Types of this sort are extensively used for display purposes and for seasonal promotion of products ordinarily merchandised in their glass containers alone.

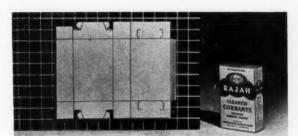


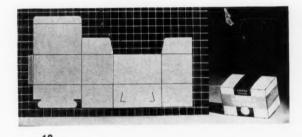


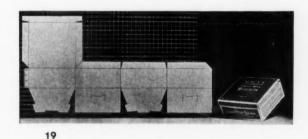
19. QUIKLOC STYLE CRACKER CADDY. Originally a caddy was a container for bulk goods which were dispensed in small units. Illustration shows one holding several pounds of crackers which is bought by many consumers. One-piece collapsible construction with patented bottom which is quickly set up. Two corners of cover require metal stitching by user. Note how the construction of the bottom flaps provides a multi-layer bottom when the caddy is erected.

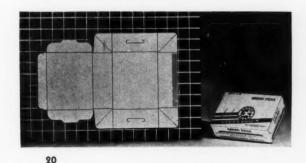
20. ONE-PIECE WEB ENDS AND SNAP LOCKS. This carton, delivered in glue tube fashion, is easily and quickly assembled. The carton shown was primarily developed for frosted foods, which require tight end closures and ease and speed in packing. It is well suited for various other types of products which require features mentioned above plus economy. Patented.

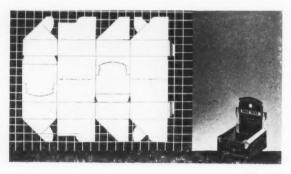






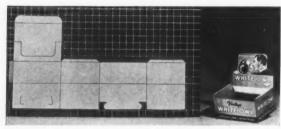






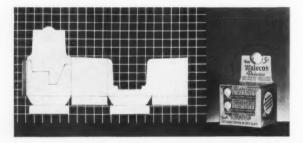
21. QUICKSET TWIN CARTONS. A new high speed economical twin carton that is designed to employ one piece of boxboard. They are so arranged that an easy pull at the corners separates them. With a flat carton left in each hand—a slight push against your chest sets them up automatically. These cartons are ideal for high speed production lines where space is limited. Patented and manufactured under license on special equipment.





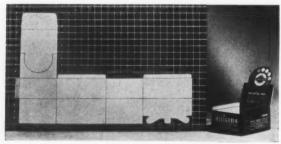
22. PANEL FOLD DISPLAY CONTAINER WITH LOCK BOTTOM. Simple in construction and setting up. Cover is so arranged as to make an attractive display panel. Protective cover is optional. Stands flat on the counter and provides good visibility to the displayed items. Requires printing and coating on only one side of the board.





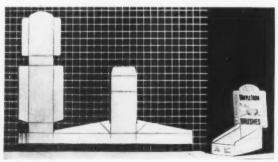
23. BROOKS TWIN DISPLAY CONTAINER. This container is a lock bottom low front, with a pivoting swing display card. The display card is designed to give the effect of printing on two sides. This effect is gained by twisting the card 180 deg. when display is set up.





24. PANEL-FOLD DISPLAY CONTAINER—WITH THREE CATCH LOCK BOTTOM. Same as No. 23 except bottom has three catches to carry heavier contents. The reader will note the wide number of variations in tab locking devices which are available to secure either ease of opening, sturdiness, the ability to carry weights, or some special feature such as tamper-proofness.

94



25. BROOKS DOUBLE-COVER DISPLAY CONTAINER. An elevating display in which the retailer must set up the display panel in order to uncover the contents, with a positive wing type support for elevated section of the container. An important feature in containers of this type is the element of fool-proofness in respect to the dealer. The ideal calls for a unit for which there can be only one way—the correct way—of opening for display purposes. Short of this ideal, the dealer should have complete simple and well illustrated directions for setting up.

25

From roughs to finished package Michigan Cartons give you a thorough, coordinated service—just check these extras!

A COMPREHENSIVE LINE OF BOX-BOARDS allows you to choose the board best suited for your product. All board is made under rigid specifications at our mill in all standard finishes plus Michcote—the super-white that tops them all! Special coatings and finishes, paraffined, silicated and laminated boards are also available.

TAILOR - MADE CARTONS — ANY SIZE OR TYPE. We make no stock items — every Michigan Carton is designed to sell its specific product.

There are few limits to the variety of constructions, types or sizes of Michigan Cartons! Your packaging program can cash in on our years of practical experience in creating cartons and displays for almost every field of industry.

SINGLE SOURCE OF SUPPLY for boxboard and cartons eliminates for you divided responsibility and annoying delays. Boxboard and carton fabrication is completed in one large plant. Straight line production gives you the finest folding cartons actually at a savings!

PACKING DESIGN STAFFS fully equipped, will give your product careful analysis — assist you in planning and creating new sales packages or improving old ones.

✓ A FACTORY-TRAINED SALES ORGANIZATION... at your call any time, to aid you in all packaging problems.

you this unique service in action.

Mail us your present package.

Without cost or obligation we'll repack your product in a sparkling Michigan Carton and return it to you with all the facts you require.

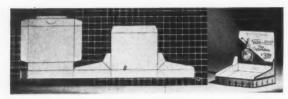
Michigan Carton Co.
BATTLE CREEK, MICHIGAN

BOXBOARD . FOLDING CARTONS AND DISPLAYS

MICHIGAN

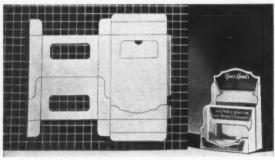
FOR GREATER SALES PACK IT IN





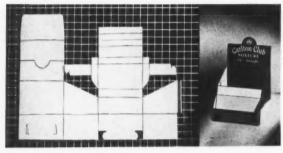
96

26. BROOKS TILTING DISPLAY CONTAINER. This style is equipped with a rear tab which the dealer elevates and secures in the rear panel, effectively displaying the merchandise at a desirable angle. This tab may be seen as indicated in the diagram-photo, upper left hand corner. This is a patented display container type of construction.



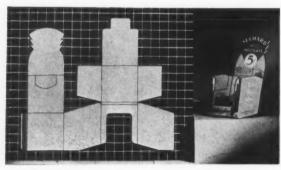
0.7

27. SKYSCRAPER (BROKEN BACK) DISPLAY CONTAINER. Patented container for displaying products in two tiers in an upright or "skyscraper" manner. Made with easel to hold second tier in raised position. Scored in center so that for shipping it folds up, but is readily set up for display by the dealer. When folded for shipping, the two halves of the unit so interlock as to form one flat, rectangular carton with all merchandise protected on all sides.



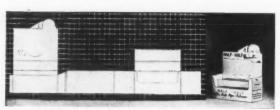
28

28. FRONT PANEL, LOCK BOTTOM DISPLAY CONTAINER WITH POCKET. An ingenious display by which contents are sold from the stock packed in the main portion of the container, while the pocket front permits an effective continuous display of the actual article. Prevents unsightly gaps in the display line, which is a weakness in many display containers. Note how the pocket front hangs below counter level or level of step on which main portion of display rests.



29

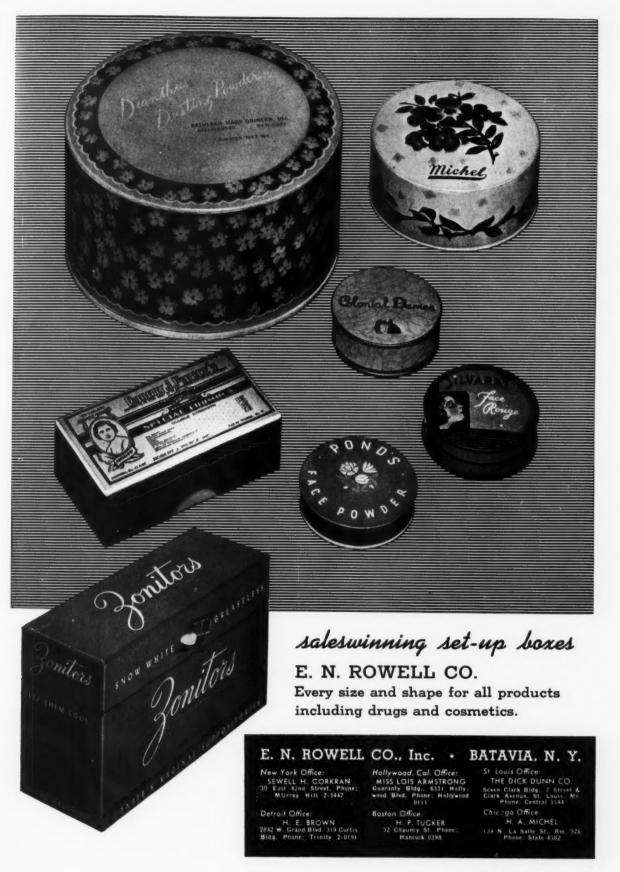
29. DARRAGH DISPLAY CONTAINER. The main feature of this unit is that contents, when loaded for shipment, are in an upright rectangular position, but when ready for counter displaying, they are thrown to a stacked position offering excellent visibility. On display, the contents slant backward with their front faces at right angles to the consumer's eye. Frequently used for tall products such as candy bars, wrapped candies and similar items.

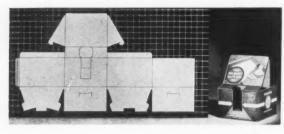


PACKAGING CATALOG

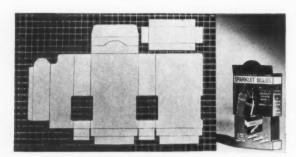
20

30. TWO-STEP DISPLAY CONTAINER. Patented display which shows products in two steps or tiers. Made in one piece, shipped flat. Easily set up by pushing down on two upright pieces which are scored to form the steps. Requires protective sleeve for shipping filled with merchandise. A simple, attractive display unit of sturdy construction and good counter stability.

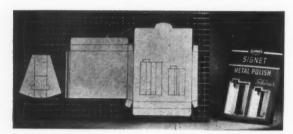




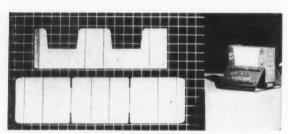
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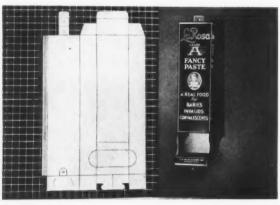
39



3



34



31. COUNTER DISPLAY DISPENSER. A novel container in which the display panel, customarily placed at the back, is placed somewhat forward, so that only a few of the articles are displayed, the greater number being behind the display panel, from which position they are dispensed. Avoids disorderly appearance of partly filled displays after a few units are sold. This device is unsuitable where mass display is the desired merchandising method

32. CENTER-DIVIDER DISPLAY DISPENSER. A straight tuck end carton with center divider forming two compartments. Readily filled, products falling into position with removal of bottom one. Stands erect on counter or may be hung on wall. Center divider construction a patented feature. Important considerations in planning dispensers of this type are: (a) provision of ample opening for withdrawal and (b) provision against "jamming" of product in reservoir tower. Both are easily provided for with a bit of foresight.

33. MULTIPLE-PRODUCT DISPLAY CONTAINER. Effectively displays a variety of different sized products. Construction uses a reverse tuck end carton, with extended display panel, and a separate reinforced inner platform. Products rest securely on double platforms. Fitted with easel back to set display at an angle. Diecuts which serve as receptacles are varied in size and shape to meet the particular needs of each display used.

34. FREE PAMPHLET DISPENSER. This construction is easily set up on the dealer's counter ready to serve as a dispenser of pamphlets, advertising media or similar material. Its two-piece construction, simple and unique, is extremely inexpensive, and provides an economical means of shipping and distributing free literature. Note that the unit faces both ways—permitting use on island counters.

35. HANGER DISPENSER. This high, narrow dispenser holds a single row of packages, piled one on top of another, with an opening at the bottom through which they are easily withdrawn. Occupies minimum space on crowded drug store counters or may be hung on the wall or other available space. Note top and bottom hanger tabs, provided as an integral portion of the display carton blank.

METAL BOXES - PAPER BOXES - WOOD BOXES - DISPLAYS



METAL BOXES

DISPLAYS

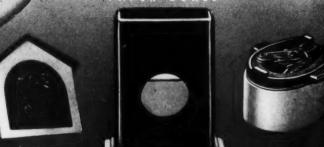
WOOD BOXES

FOR years, Arrow has supplied leaders in various industries with outstanding boxes and displays. And the constantly growing Arrow reputation for versatility has added many important customers to Arrow's famous Who's Who list.

During 1942, temporary limitations of some materials will undoubtably arise. However, Arrow displays and display boxes will continue to accomplish their full task of getting, and holding, consumer attention.



PAPER BOXES

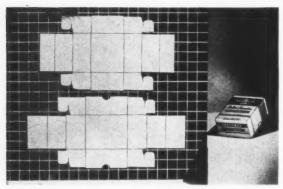


ARROW Manufacturing Co., Inc.

15TH & HUDSON STREETS . HOBOKEN, NEW JERSEY

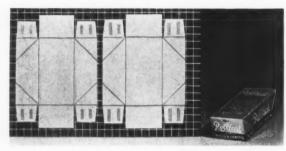
BORES & DISPLAYS . IN METAL . CARDBOARD . WOOD . CLASS . FABRICS . LEATHER . IMITATION LEATHER

CLASS B



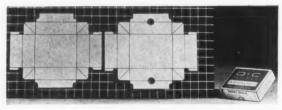
36. TWO-PIECE TELESCOPE CARTON WITH OVER-LAPPING ENDS. This style carton assembled and folded by hand. Ends overlap and are held against the side by friction, but may be glued for additional reinforcement. A development of the overlapping end carton is an extra length tab provided as an additional protection on the top and bottom. A similar reinforcement along the sides can be provided for strength.





37. TWO-PIECE FULL TELESCOPE CARTON. These cartons are glued in collapsible form by carton manufacturer and shipped to user in that manner. Quickly set up by infolding to an upright position. Note that top half of container is slightly larger in all dimensions than lower or bottom half. This permits of telescoping without distortion of the container. Size, in such instances, must be accurately controlled to provide a tight—but not too tight—fit.





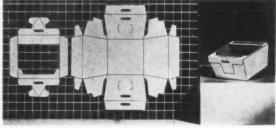
38. TWO-PIECE SIMPLEX STYLE CARTON. A carton construction which is rigid, easily set up and free of locks or tabs on exterior surfaces. The web corner construction prevents leakage when packing frosted foods. This style is also adaptable for shoes, textiles and other types of products requiring a two-piece carton. This is a patented type.





39. NOLOX CARTON. A new type of carton which has already proven its value from an economical standpoint. This carton is delivered in flat pre-folded form and it is only necessary to raise the sidewalls with a quick snap to set them up into rigid position. The specially designed corner lock is so arranged that after carton is set up the sides and ends do not collapse. This carton can be made with separate or attached cover. Patented and manufactured under license on special equipment.

39



40. BERRY AND VEGETABLE CARTON. This type of carton has proven its adaptability to replace the ordinary wooden basket used for berries, small fruits and vegetables. Overlapping sides are wire stitched to set in proper position for use. Raised bottom and slotted sides insure proper ventilation for contents. Can be equipped with transparent window cover with locks to hold it secure. Patented.



The dragon was shaking his tail too stream ously and every time he did, the cheap jertychoult houses collapsed and a new city had to be built from the ruins.

So, the little slant-eyed people called on the white magic of the man with the crazy deas. Perhaps he could thwart the dragon.

Frank Lloyd Wright went to Tokyo and built the Imperial Hotel for the Japanese. He built it deep and of the best materials. Pretty soon, came a big earthquake—the biggest ever—and when the ground stopped its tremors even communications were cut off. Wright sweated three thousand miles away, anxious for news of his great experiment. Finally came the word that his was the only large building left standing, completely untouched by the

The relationship between intelligent architecture and sound packaging is not strained. Ingenious us of quality materials will enable your package to withstand the shocks of modern competitive merchandising. Our Board Mills, Folding Cartan and Shipping Container Plants, with captole merchandising and technical staffs, are in one location, enabling us to handle efficiently your entire packaging requirements.



THE OHIO BOXBOARD CO.

RITTMAN, OHIO

SALES OFFICES:

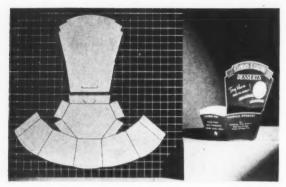
RITTMAN

CLEVELAND

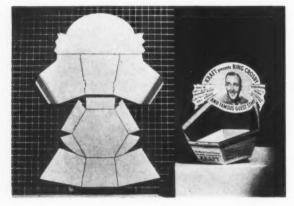
PITTSBURGH

NEW YORK

CHICAGO

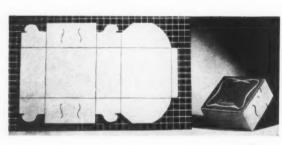


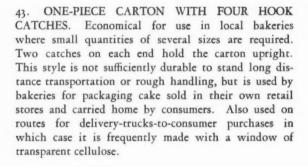
41. BASKET DISPLAY CONTAINER. A container designed primarily for aisle table and counter display of small packages of quick-sale type, such as gelatine desserts. Does not serve as shipper but is easy to set up, displaying goods in studied disorder, thus encouraging self-service without disturbing unity of display. An extremely effective type of mass display widely used in the drug and grocery fields.

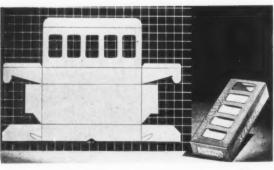


42. BASKET DISPLAY CONTAINER. Similar to No. 41 except for general shape of basket portion and display panel. The display panel has been creased so that it can be folded to fit a shipping case. This does not interfere with the rigidity of the panel when on display as the panel is forced into a curved position.

CLASS C







44. PETERS LOCK CARTON. Derives its name from Peters' machines which are used for automatic forming and lining. Widely used for biscuits, crackers, lard and shortenings and adaptable to wide variety of large volume products. The multiple window cut-outs in the assembly here shown are designed to provide a high degree of visibility for the assorted items packed in this unit while, at the same time, maintaining the strength and rigidity of the cartonboard. A single strip of transparent material applied in a single operation forms all five windows.





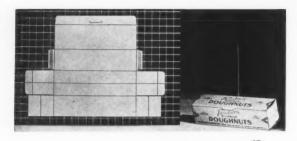
TACTICS and equipment of 1917 are of little value in today's mechanized warfare. There have been vast changes, too, in merchandising tactics...changes that have placed a far greater responsibility on packages. Consumers have come to regard packages as important guides to quality.

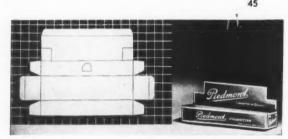
A successful package, these days, must be able to do many things. It must be pleasing to the eye . . . must thoroughly protect the contents . . . must be appropriate to the product in shape, color, and design. And it has to be easy to fill, easy to close, easy to use.

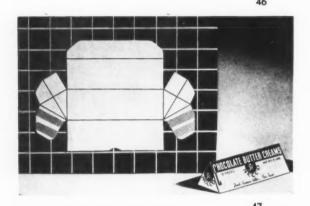
Constantly alert to these factors, Sutherland is able to produce successful packages economically...is recognized as a pace-setter in modernizing package design and improving construction.

You are invited to use Sutherland's Checking Chart to determine the sales appeal of your package. Send for a copy today. There is no cost or obligation.

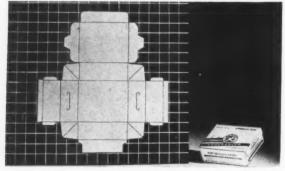












45. ONE-PIECE COLLAPSIBLE CARTON. A simple one-piece container serving as a carrier especially useful for bakery goods, cigarettes and many other products where quick set-up and low cost are factors. Shipped to user in knocked-down form, so that it occupies a minimum of storage space. Note cross hatched indications for glued seams. These tabs adhere to the outer ends of the bottom-most tabs. The intervening wall forming the bottom of the container is scored to fold in half, lengthwise, when shipped. This is snapped into erect position and made rigid by turning up tabs on side walls.

46. ONE-PIECE BRIGHTWOOD STYLE CARTON. A widely used one-piece carton for large scale production. Automatically formed, glued along the vertical panels, filled and sealed by Brightwood machines in the package user's plant. Definite economies in packaging can be effected by the use of this style carton if sufficient production is regularly handled to justify the use of this automatic equipment.

47. TRIANGULAR CARTON. This carton is received in a glued knock-down form. It is easily assembled for filling by pushing the ends inwardly. After filling, the carton is closed by tucking in the top panel. Its novel shape adds display value to the individual carton. Note score lines on side walls. The folding of these walls permits shipment of the pre-glued carton in the flat.

48. ONE-PIECE COLLAPSIBLE CARTON. Quickly set-up carton, made with tongues on cover which tuck into slots on the sides, making this style especially well suited for baked goods and similar products. Transparent cellulose window allows view of product without opening carton, which is most important to keep food products fresh and avoid spoilage from exposure to dust, dirt, flies or frequent handling before sale. Sometimes used with an inner band or liner, placed around a cake, the carton being made sufficiently high to prevent contact of cover with frosting.

49. ONE-PIECE SIMPLEX STYLE CARTON. Combines rigidity, finish and strength of set-up box and economy in cost, shipping and storage of a carton. Quickly set up without machinery. Made in all sizes from small candy boxes to large containers for blankets. One-side printing. Made with or without display lids and slip-over covers. No raw cut edges or outside locks mar the outside printed surfaces or finished appearance of the carton. Patented.

The NEW HOME of A C E

CARTON CORPORATION

AT 5800 WEST 51st STREET . CHICAGO, ILLINOIS



The Result of Exhaustive Study in Improved Methods of FOLDING CARTON MANUFACTURING

HERE in our new, modern plant is to be found the very last word in carton manufacturing facilities. Additional new, more efficient equipment has been installed for maintaining Ace Quality. 92,000 square feet of windowless working space; completely air-conditioned and humidity-controlled. Advanced, True-Spectrum, daylight illumination insures faithful color printing and steps up employee efficiency.

Fifteen years of constant conscientious effort toward *improving* our services, and the *earned confidence* of our many valuable customers, has made this expansion a proud reality.

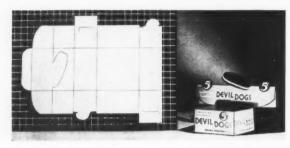
Our staff of packaging experts find renewed inspiration here where we have set a new and greater goal of achievement.

We extend a cordial welcome to interested carton users to drop in and inspect our new home.



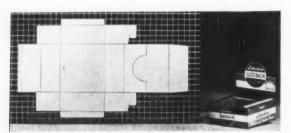
ACE CARTON CORPORATION

Folding Paper Cartons—Folding Displays—Display Containers
5800 West 51st Street, CHICAGO, ILL. • Phones: CRAwford 0111

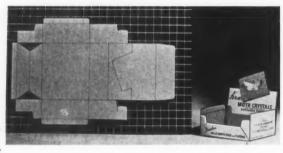


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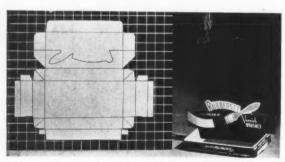
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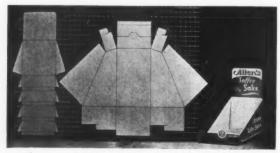
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52



53



50. ONE-PIECE CARTON WITH TWO HOOK CATCHES. An economical carton for local bakery use, where small quantities of several sizes are required. A catch lock on each end holds the carton upright. This style is not sufficiently durable to stand long distance transportation or rough handling, but is used by bakeries for packaging cakes sold in their own retail stores and carried home by consumers. Also used on routes for delivery-truck-to-consumer purchases, in which case it is made with a window of transparent cellulose.

51. ONE-PIECE OVERLAPPING FRONT—LOCK BACK PANEL, FOLD COVER. Economical to manufacture and extensively used for display purposes, this box has the added strength of the overlapping front which is not provided in the straight front box. The box can be made with panel-fold style display top, making possible the economy of printing on only one side of the sheet.

52. ONE-PIECE OVERLAPPING LOW FRONT DIS-PLAY CONTAINER. Similar to No. 51 except front is cut down to show face panel of articles when they are packed in an upright position. The tuck flap at the top of the container should be made long enough to provide full protection for the packaged contents at the front corner, where the low wall of the display container offers a relatively weak point.

53. ONE-PIECE SIMPLEX CARTON DISPLAY. An efficient container and display unit. Die-cut cover offers excellent advertising display. Easily set up and free of locks on the exterior surfaces. Its most popular use is for one-dozen units such as paper wrapped toilet soaps, automotive or hardware items. Does not require protective sleeve as cover closes with front and side tucks. The side tucks, furthermore, increase the size of the display panel itself.

54. RHOMBOID DISPLAY CONTAINER. An effective new type of display container in which the individual packages are displayed in a staggered manner. Particularly useful for fragile items packed in glassine or transparent cellulose bags. Keeps packages in neat position while on display. This is a patented type of display container construction.



REMEMBER YOUR CUSTOMER SEES YOUR REMEMBER YOUR AND IF IT APPEALS Package First. And If IT Appeals Then Your Product!

You know your product is good, but do your customers? Perhaps it's their feminine intuition, but, nevertheless, women have always felt that "valuable things come in smart packages" and do their shopping accordingly. Sefton products are designed with this important idea in mind. Will the package attract a woman's eye away from a competitor's? Will she thank the designer for his ingenuity when it opens so easily? Will it be dramatic enough for her to remember the next time she wants to buy? Your personal packaging problems are ours, won't you let us help you solve them? Write us today. No obligation, of course.

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PACKAGING CATALOG

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CREATIONS THAT SELL



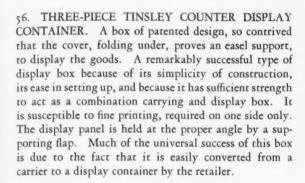
PAPER BOXES • DESIGNING • PRINTING SPECIALTIES • DISPLAYS

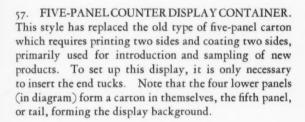
G. A. BISLER, INC.

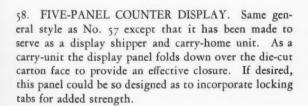
More Than Boxmakers

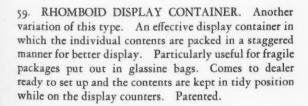
FIFTH AND BROWN STS., PHILADELPHIA, PA. 55 WEST 42nd ST., NEW YORK "BISLER BOXES BRING BUSINESS"

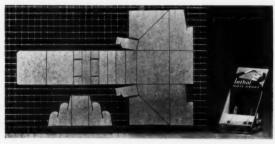
55. RHOMBOID TIER DISPLAY CONTAINER. A novel development, combining the stepped and tilted back arrangements. Well adapted for display of small articles. Provided with inner packing and protective cover to ship in set-up form. Note the interior dividers which prevent lateral movement of the products on display. A patented variation of the Rhomboid type of display container.

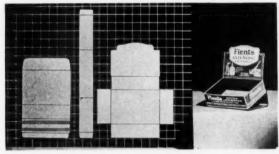


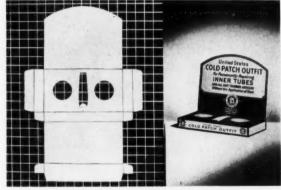


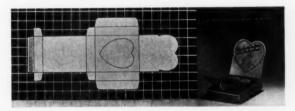


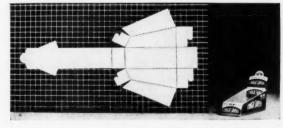






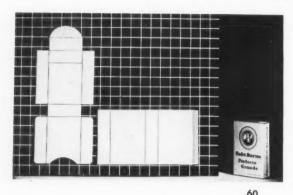




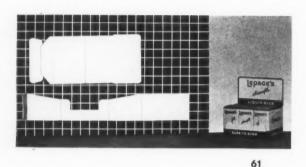


PACKAGING CATALOG

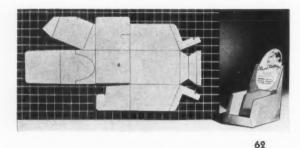
CLASS A B



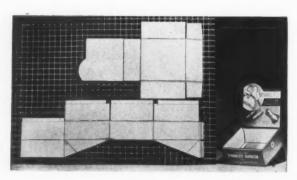
60. TUBE AND SLIDE. Consists of a folding inner portion, variously contrived, to be inserted in a tube on which the design is printed. Access to the contents is easy and quick. It offers adequate protection for a wide variety of products, such as cigar packs holding five or ten popularly priced cigars. When this style is made with an inner tray it is well suited for pills and capsules which may be carried in the consumer's pocket.



61. BROOKS TWIN DISPLAY CONTAINER. A patented twin display container, the two sections nesting into each other, giving the dealer two distinctive counter displays. This unit of two containers requires a protective sleeve for shipping. It is economical and easy to set up by the packer and the retailer.



62. RHOMBOID DISPLAY CONTAINER. The sloping sides and special construction of this container permit of displaying goods in slanting tiers. Provided with protective sleeve, it may be shipped packed in set-up form ready for dealer to display. Well suited for small items such as cartoned bottles and tubes. One of a number of variations of the Rhomboid class.



63. SIMPLEX DISPLAY CONTAINER. A special easel permits tilting this container at different angles, for effective display. Requires printing and coating one side only. Protective sleeve necessary for shipping. Principal feature is the simplicity with which the dealer may display the goods at an angle. Display panel is equipped with supporting flap which enables advantageous showing of the advertising message.

(Please turn to page 78)

Wotch Boxes Hair Brush Boxes Nail Polish Boxes Perfume Boxes Round Powder Boxes Razor Boxes Fountain Pen Boxes Playing Card Boxes Silverware Boxes Writing Paper Boxes Counter Displays Smoking Pipe Boxes Belt & Buckle Boxes $Th_{read} B_{OXeS}$ Soap Boxes Jewelry Boxes

Let "WATERBURY" Make Your Boxes

THE WATERBURY PAPER BOX CO.

Factory at: WATERBURY, CONNECTICUT

New York City Office: 30 ROCKEFELLER PLAZA

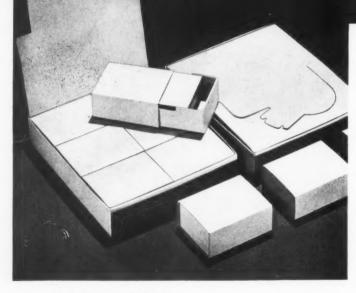


WARNERCRAI

WARNERCRAFT is a complete cardboard packaging service. Over many years, for many cus-tomers, we have succeeded by precise workmanship and modern machinery in establishing a record of quality packag-ing, whether for the most inex-pensive folding box or intricate luxury assemblies.

NOVELTY ASSEMBLIES

UNIER CARTONS



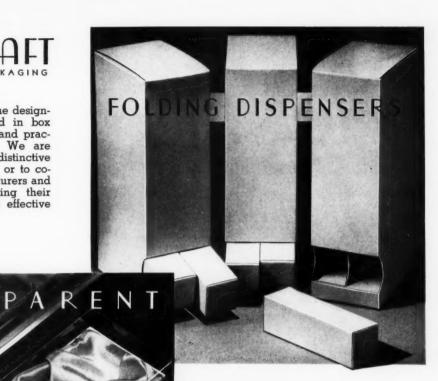
A Better Package—Or A Less Expensive One?

Some manufacturers come to us for one reason, some for another. With our complete modern facilities and designing experience we have created many unusually striking packages which, by their beauty and appeal, have considerably stepped up a product's sales.

At other times, for products that were meeting stiff price competition, we have reduced packaging costs by a most

WARNERCRAFT

We maintain a full-time designing staff, experienced in box construction, display and practical merchandising. We are prepared to suggest distinctive new packaging units, or to cooperate with manufacturers and distributors in adapting their own designs to more effective packaging use.



WARNERCRAFT

DISPLAY BASKETS

careful and simplified construction of the box, but without any sacrifice of quality.

Possibly you are considering some new packaging for your product. Possibly we may be able to create exactly what you want. At least, Warnercraft Packaging facilities are available, if you care to talk with us.

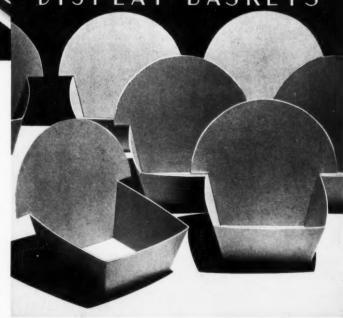
THE WARNER BROTHERS CO.

BOX DIVISION

BRIDGEPORT, CONN.

200 Madison Avenue

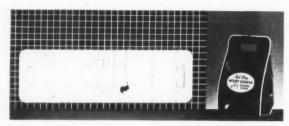
New York, N. Y.



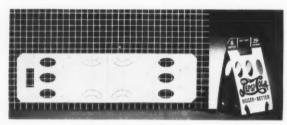
PACKAGING CATALOG

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BOTTLE CARRIERS

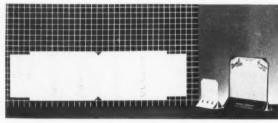


64. BOTTLE CARRIERS. This construction has numerous advantages for doing an excellent job of carrying three or six bottles. It requires a minimum amount of material having little or no waste, exceptionally good printing surface and more than enough strength. When assembling this carrier for packing, a simple metal form makes setting up semi-automatic. Patent applied for.



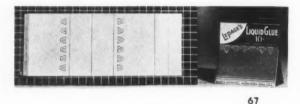
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65. THREE-BOTTLE CARRIER and DISPLAY. This carrier has the feature of being an effective display and carry-home carton combined. It requires printing two sides; however, printing is only required on the inside for the display feature. For economy, therefore, the outside printing could be eliminated. Patent applied for.



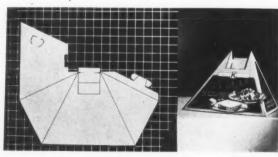
66. BROOKS AUTOMATIC DISPLAY CARD. This display card consists of a one-piece stitched blank arranged to hold 12 units (6 on each side). By pressing down on the display panel, the bottom automatically forms a base and easel for display. This eliminates the necessity of a separate easel.

67. MULTIPLE UNIT DISPLAY CARD. This economical display card holds twelve tubes suspended from die-cut tabs. Six units are on display with a reserve

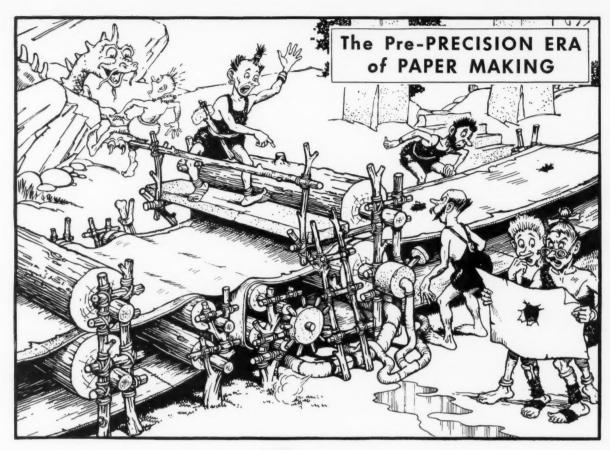


stock of six tubes on the back panel. The design repeats so that display can be reversed when front half of goods is sold. This card requires no separate easel but can be folded to ship flat.

DISPLAY STANDS



68. ONE PACKAGE DISPLAY STAND. A popular, effective and highly economical method of getting one package displayed on the counter. May be made to fit in corrugated container with products so dealer cannot overlook it. Cut-out on panel can be made to hold various shaped products. Although this unit ships flat and, hence, requires minimum shipping space, its erection is so simple that a relatively high proportion of displays can be expected to find their positions on desirable counters.



Joday

PAPER is made on PRECISION MACHINERY So are FOLDING BOXES and CARTONS

WE PLACE AT YOUR DISPOSAL

Every Modern Faculty for the Development, Design and Manufacture of all types of Paper Packages

LET US SUBMIT NEW IDEAS WITHOUT OBLIGATION

We Specialize in the following

COUNTER DISPLAYS
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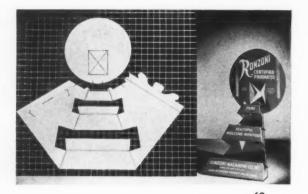
MILLINERY BOXES
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PAPER CANS for BULK ICE CREAM . . . and many other items

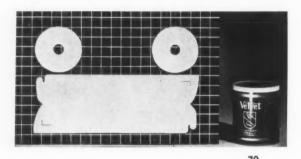
Send Your Inquiries to:

MORRIS PAPER MILLS

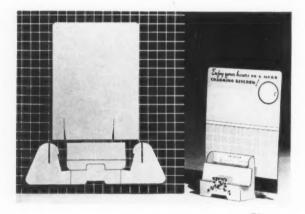
135 South La Salle Street, Chicago, Illinois



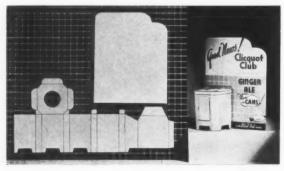
69. TWO-PIECE DISPLAY STAND with separate card. Similar to No. 68 except that it is made to display a number of products in a family group. By the novel structure, the necessity of hand-applied easels is eliminated. Slightly more complex in form than the type shown above. Note the use of triple locks to achieve necessary strength.



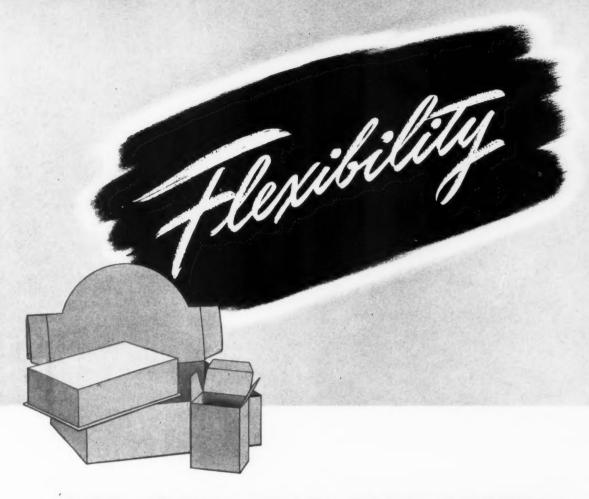
70. DUMMY DISPLAY CARTONS. Display units of this nature are widely used by tobacco manufacturers for dealer window displays. Shipped flat and readily set up by dealer, they save tying up saleable merchandise in displays and possible spoilage due to exposure to sun and dust. Available for other products. Patented.



71. INDIVIDUAL DISPLAY STAND AND CARD. An inexpensive, effective, two-piece unit which raises the product above the level of the counter and gives close tie-up with the advertising method. By interlocking the stand portion with the display card, a rigid easel support has been formed to hold the product and card in an upright position. Some users design the card so that it may be re-used by the dealer as a unit by itself after the display has served its function.



72. PLATFORM STAND AND CARD. Designed to project into consumer consciousness the original offering of ginger ale in cans. The actual can, in place on the refrigerator in the assembled unit, covers the empty space below "Good News!" and provides, in the manner shown in the illustration, a focal point for copy concentration. Considerations of economy dictated the simplest possible structure (commensurate with three dimensional effect). Innumerable variations of this platform type of design are, of course, possible.



NOW MORE THAN EVER BEFORE...

With the constantly changing conditions and the increased demands made upon us it was necessary that we become extremely FLEXIBLE to meet any situation.

WHAT THIS MEANS TO YOU: As manufacturers of Folding, Set Up and Sim-pac paper boxes, we have that essential *flexibility* enabling us to change designs and styles, to alter materials and shift production schedules to fit your needs and to do so without the usual *red tape* delay. Our ability to laminate paper to boxboard gives no end to the combinations possible—a definite aid to *flexibility* at all times and doubly so today

with many specialty board items out of existence.

THE MAIN THING IS THIS: Since 1896 superior workmanship and service have become traditional with Paper Package Company. By being alert to the times, we have, through a *flexibility* of Plant, Product, and Personnel, been able to maintain these standards that are more vital today than ever before.

Set Up Paper Boxes • Folding Cartons Sim-pac Boxes • Displays Varnishing • Lacquering • Diecutting

PAPER PACKAGE COMPANY

INDIANAPOLIS, U.S.A.

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Paraffined and waxed cartons

by Owen E. Lyons





ARTONS made of wax-coated or wax-saturated paperboard provide resistance against loss of moisture from inside the carton, or penetration of moisture from the outside. Certain packaged food products such as ice cream, butter, lard, oleo, shortening, cheese, and frozen foods are shipped and stored under full or partial refrigeration. Upon removal from refrigerated temperatures to room temperatures, moisture droplets gather on the surfaces of the carton. Wax treatment provides resistance to this moisture and enables the carton to retain its strength and shape en route to the consumer's kitchen, or while stored in the consumer's refrigerator. The foods named above take by far the largest portion of the country's output of waxed cartons because of the need for a carton to resist the penetration of moisture from the surface.

Types of paraffin application

There are two principal methods of applying wax: the high-gloss or cold-water method, which leaves a coating of wax on the surfaces of the carton; and the saturation or impregnation method which drives the wax into the fibres of the board, leaving the surfaces comparatively dry and uncoated. A third and less common manner of treatment is "dull paraffin," by means of which a very light coating of non-glossy wax is laid on the surfaces.

Sequence of manufacturing operations

The basis of manufacturing paraffined cartons is the printing and die-cutting of the carton so that its printed design and all the board used in its construction are available in one unit, properly printed, scored and cut. Production of commercial quantities of cartons is handled in combination runs—same number of cartons per sheet. The combination may include cartons of but one design, or it may be made up of various sizes, colors, designs, and construction combined to run efficiently together. Manufacturing procedure follows this sequence: printing, die-cutting and scoring, paraffining and gluing.

Printing and waxing

The merchandising advantages of well-printed designs and colors are available to buyers of paraffined cartons. Paperboard manufacturers provide a well-bleached outer surface that is excellent for modern printing processes. A semi-bleached or unbleached inside surface is usually

1. Paraffin-treated cartons for quick frozen foods. Photo Sutherland Paper Co. 2. Butter cartons treated with a protective non-rub wax. Photo Menasha Products Co.



H. A. Butterfield, one of our founders

Oldest Paper Board Distributors In America

The

BUTTERFIELD-BARRY*COMPANY

INCORPORATED

For generations we have handled the paper board requirements of leading Set Up and Folding Box Manufacturers in the east.

Now, we are at war. Knowing your disposition to cooperate with the present and future conditions to meet Government requirements and regulations, you will be faced with the problem of quality changes and substitutions.

Our facilities and wide experience are at your disposal. Feel at liberty to consult us on your various problems.

DISTRIBUTORS OF EVERY GRADE OF BOX-BOARD AND SPECIALTIES FOR BOTH SET UP AND FOLDING BOX MANUFACTURERS.

Water-proof and grease-proof lining (Tredonia Process) furnished in either sheets or rolls.

Regular single and double sheet lining done at our various mills and our New York plant.

The BUTTERFIELD-BARRY COMPANY

INCORPORATED

174-176 Hudson Street

New York City

PACKAGING CATALOG

specified for cartons that carry food not directly in contact with the inner surface—butter and lard, for example. Linerless ice cream cartons are factory-filled, with the ice cream directly in contact with the inner surface. A solid-bleached sulphite board is standard for this carton, because of its cleaner, more sanitary appearance. A producer of frozen foods recently adopted a linerless carton for packaging vegetables, using a solid bleached sulphite board. On the subject of direct contact of foods with cartons, it should be mentioned that leading manufacturers of board have made notable contributions to sanitary packaging through microbiological studies of paperboard.

The inside surface of a linerless ice cream carton is treated with a special, high-gloss, hard-surface wax to insure against weakness of the surface next to the product. The outside surface is treated with a lighter, eggshell wax coating which affords adequate protection against attack by moisture from the outside. Varying weights of wax, and varying compositions, may be applied to attain specific protective properties.

Considerable progress has also been made in paraffining. In addition to a store of technical knowledge concerning waxes, wax combinations and properties of waxes, the industry has greatly advanced the technique

 Wax treated printed pails for ice cream. Photo Menasha Products Co. 4. Paraffin coated carton for use in dairy plant. Photo The Gardner-Richardson Co.





of applying wax. Flexibility and accuracy of application has greatly improved.

Gluing of paraffined cartons

The gluing operation follows the printing, die-cutting and waxing of high-gloss waxed cartons. Special gluing machines remove the wax from the surfaces to be glued, a glue wheel spots the adhesive at the proper points, and the folding and setting of the glued surfaces is then done by the gluing machine. Glues derived from vegetable sources are standard specifications for food-containers.

The gluing of saturated or impregnated cartons also follows printing and cutting. Because of the comparatively dry surfaces of impregnated cartons, gluing is easily handled. Pail-shaped packages for ice cream are examples.

For extra charge (an extra machine operation), the paraffined cartons used for ice cream can be furnished with a de-waxed strip or spot upon which flavors may be stamped or written during packaging.

Construction and sizes

Paraffined cartons for foods in contrast to unparaffined cartons for miscellaneous uses, are well standardized in construction and in size. This is especially true of packages for ice cream, units of which have been standardized in pints, quarts and multiples thereof. Packaging of ice cream is either a semi-automatic or a manual operation, and this has a bearing on standardization of construction.

Likewise, cartons for butter, lard, oleo, shortening and cheese have a constant unit of sale—the pound or multiples of the pound—which limits their variation in size. Some leeway is required in the construction of cartons because of slight variations in the automatic machinery available for packing these products. (Automat, Mor-pac, Peters machines.)

The newest branch of the food business to become a sizable purchaser of paraffined cartons is the frozen food industry. Marked differences in construction of cartons and in sizes have characterized its packaging during its expansion of the past decade and its standards are still being developed. This applies chiefly to consumer-size packages in which the unit of sale is an "average-family" serving. Since this varies in volume and size with the density or looseness of frozen vegetables and fruits, a variety in sizes seems to be unavoidable.

Because frozen foods require extraordinary protection against dehydration, a number of packages intended to assure that protection have been used by the industry. Many have proved unsatisfactory. As yet there is no general agreement on the best protective package for frozen food.

Through attempts at extraordinary merchandising effects, numerous "trick" packages have also been adopted and used for frozen foods. Despite these differences in construction and size, paraffined containers are universally specified by this new industry because of the protection they provide against condensed moisture when removed from refrigeration.



FOLDING PAPER CARTONS:

FORTORNOEE PRERION ON HUDSON, N.Y.

475 FIFTH AVENUE NEWYORK STATLER BUILDING B O S T O N

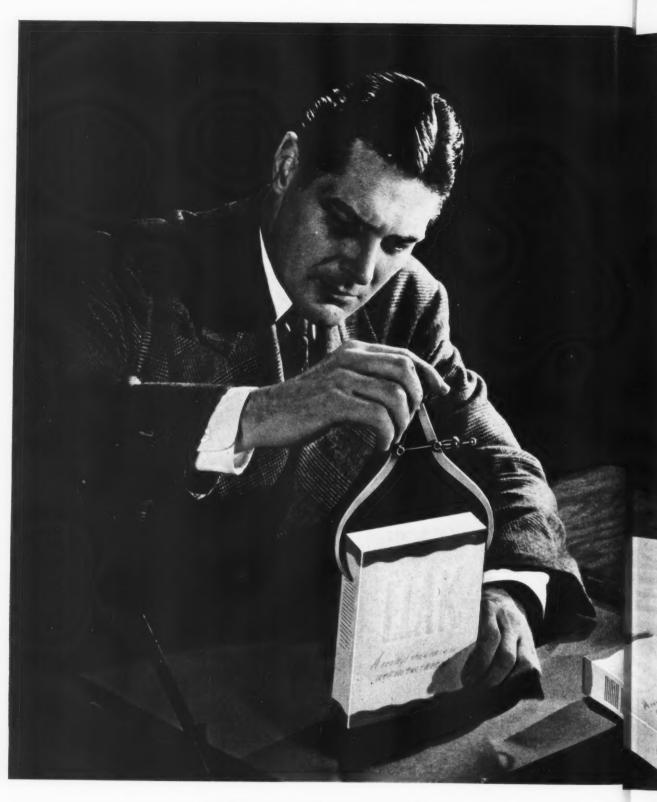
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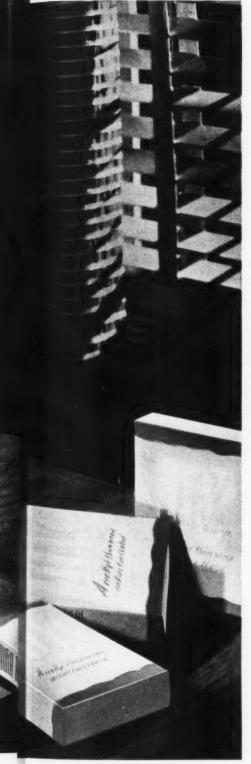
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Gardner-Richardson



THEY'RE PRECISION -ENGINEERED

cartons every year?

EVERY DAY, many millions of folding cartons flow through the two big Gardner-Richardson plants. Pick up a handful as they come off the lines—and you'll notice the cleanness of the printing, the brilliance of the colors, how true and square they fold. Check them for dimensional accuracy—you'll find them surprisingly accurate. You wonder: how is it possible to maintain such high standards on billions of

The answer is—Gardner-Richardson cartons are precision-engineered! In the Gardner-Richardson plants everything is done precisely—checked, tested, proved every step of the way—from raw pulp to finished carton. By enforcing rigid technical control, specifications are lived up to in the making of the board, formulation of the inks, cutting of the dies—in presswork and craftsmanship. As a result, Gardner-Richardson can assure its customers of finer, brighter, more unified cartons—and duplicate them order after order—year after year!

THE GARDNER-RICHARDSON CO.

Manufacturers of Folding Cartons and Boxboard
MIDDLETOWN, OHIO

Sales Representatives in Principal Cities:

Philadelphia • Cleveland • Chicago • St. Louis • New York • Boston • Pittsburgh • Detroit

Folding Cartons

N the past few years, laminated cartons have begun to take an important part in packaging. They offer numerous advantages, and it is difficult to say whether the greatest benefit is derived from the beauty of the package, or from its wearing qualities.

Technically, "lamination" means the combining of sheets of two or more materials by means of an adhesive. For many years manufacturers of folding cartons have laminated foil, glassine, transparent sheets, vegetable parchment or grease-proof paper "liners" to boxboards to provide cartons that are grease-proof or moisture-proof, or special characteristics of surface.

Laminating does for printed surfaces what few other coating processes are able to achieve. It brings out and intensifies all colors, so that a laminated carton stands out from others among which it may be displayed. Since the printing is fully protected by the transparent

film, so that it cannot be scratched or smeared, it is possible to get away from the ordinary dark reds, blues and greens, and use the lighter shades and pastel colors that appeal to women shoppers. It is even possible to have a dead-white background, which makes a very striking package. The surface of a laminated carton is smooth and shining, and pleasant to the touch.

In addition to beauty, laminated cartons offer long life without noticeable diminishing of the fresh appearance of the package. Shoppers prefer fresh merchandise, and will not buy a package that is dingy and shopworn. The laminated film is a transparent armor that keeps the carton looking fresh and new after months of shelf life. The surface does not oxidize or dull with age. If it is marked with dirt or grease, it can be wiped clean with a damp cloth. Dust does not settle on it easily, or show up on its glossy surface.

Cartons and boxes laminated with transparent cellulose film. Hosiery boxes have laminated wrappers; cigarette carton holiday sleeves are of printed transparent cellulose sheeting laminated to boxboard; box windows are formed by laminating completely over die cut cartons. Photo Shellmar Products Co.



The Hallmark of Economy



...and Quality!

THE Simplex trademark establishes beyond doubt that you are getting a genuine Simplex box - which means a paper box that combines the durability and quality appearance of a set-up box with the economy and compactness of a folding carton.

The Simplex box is shipped and stored *flat*. It comes in one or two-piece construction to meet the needs of all manufacturers. It can be set up instantaneously when needed, forming a strong, handsome package.

If your problem is one of storage . . . cost . . . production, the Simplex trademark is the answer. Learn about this miracle package that meets so many of your most pressing needs.

SIMPLEX PAPER BOX CORPORATION

LANCASTER PENNSYLVANIA

Methods of production

There are two methods of producing laminated printed cartons. In one, the transparent film is printed, in reverse, on the under side, and is then laminated to plain boxboard. This is known as "reverse printing." In the other, the board is printed, and the transparent material of sheet is combined with it. Both processes have special advantages, depending upon the quantities involved, and the form of the package. The first method is particularly desirable where very light colors are used over large areas, since the adhesive is below the ink, not above it.

Cellulose acetate is generally used for laminating folding cartons. Regenerated cellulose is sometimes used, but it is more responsive to atmospheric changes, and has a tendency to shrink, which causes warping and curling of the finished product. Rubber-hydrochloride film is also used to some extent, usually not on the outer surface of the carton, but rather as a liner laminated to the inside. This greatly improves the moisture-proof and grease-proof characteristics of the board.

Cellulose acetate is most frequently used in 88 gage, which is equal to .0088 inch in thickness. However, where additional strength is required, or if there is a window in the carton, 100 gage is used; and for large cartons with large windows the film specified may be as heavy as 150 or 200 gage.

Where desired, cartons can be "strip-laminated," a process whereby transparent film is applied to only a portion or strip of the carton blank. In the case of a large carton, where cost is a factor, only the top and side panels may be laminated; or the glue laps on side or end panels may be left unlaminated to permit the use of regular adhesives in constructing the carton.

Paper-board to be laminated should have a smooth,

hard surface, preferably coated. It should neither be porous nor have an irregular surface. Some boards are discolored by laminating, and others adhere poorly. It is advisable to submit a sample of the proposed board to the laminator before proceeding with the job.

If the board is printed, the inks should be flat and dull, containing a minimum of grease, oil or wax. Offset sprays containing waxes should never be used. It is sometimes necessary to imprint a carton, at the time it is used, with additional information such as color, weight or size of contents, or a dealer's name. Special inks in standard colors are available for hand stamping or machine imprinting.

Advantages in display cartons

In the case of window cartons, lamination is particularly desirable. Instead of a relatively insecure "patch" pasted on the inside of the carton, the window is covered with a smooth continuation of the film that covers the rest of the outside surface of the package. There are no rough edges of board around the window to collect dust and dirt, and the window cannot be pushed in by careless handling. Where reverse printing is used, the frame of the printing around the window can be a little smaller than the window itself so that the cut edges of the board do not show at all.

Not all cartons should be laminated. In the case of an item selling for ten or twenty cents, on which the margin of profit is only a cent or two, and on which turnover is rapid, lamination would be a needless extravagance. However, at any time, if it is desired to give an impression of fine quality, or if the sale of an item may be impaired by poor appearance of the package after handling or long life on a shelf, laminated cartons have much to offer.

Paper containers for liquids

IQUID-HOLDING paper containers have been in use for a number of years, but their field of usefulness in packaging is ever increasing. New types of containers have been developed, old types have been improved and numerous new applications initiated.

Cylindrical and slant-walled canisters are among the oldest type of liquid-holding containers. They are usually formed of a fine grade of bleached sulphite and are wax coated or otherwise treated to secure long time impermeability to moisture. The wax coating serves to stiffen the board to a substantial degree and this permits the effecting of a relatively tight seal by the use of die-cut paperboard closures which fit as friction plugs into the tops of the containers.

On cylindrical types, partially telescoping, overlapping lids are frequently utilized. One newly developed type utilizes slots, located slantwise in the side walls of these lids, to provide air vents which facilitate removal of the canister covers.

Pre-fabricated "bottles"

Developed originally for milk and cream and still largely restricted to this purpose are a number of types of so-called paper "bottles" pre-fabricated in boxmaking plants and shipped under sanitary conditions to the dairy where they are filled and re-sealed either on standard bottle filling equipment or—in the cases of some types—on special machinery. These containers vary widely in











their structure, some assuming the form of truncated columns with metal inserts at the neck opening to provide rigidity and to permit of the use of plug-type paper closures. Others are rectangular in shape with tops and bottoms seamed to a formed side wall blank and with staple-attached closures.

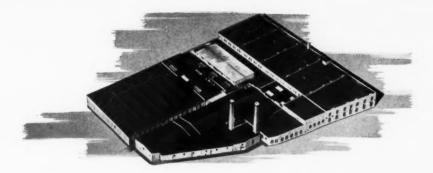
Bottle "blanks"

Other types of paper milk "bottles" are supplied to the dairy as flat blanks and are erected and sterilized immediately prior to filling. Here again, shapes vary from the cylinder with pleated top through the cone with flat metal closure to the rectangular type with slanting top and side walls and an integral closure opening.

Liquid-holding bags

The development of water-holding sheets, such as rubber hydrochloride, has permitted manufacturers of products of a liquid or semi-liquid nature and of products sold in brine to use water-tight bags as their containers. Such containers, in the smaller sizes, are sometimes used in the form of a bag alone with heat-sealed closure. Larger

1. Cylindrical two-piece containers with special liners eliminating necessity of wax coating. Photo Sutherland Paper Co. 2. Conical pre-fabricated 'bottles" with metal ring closure seats and paper closures. Photo Sutherland Paper Co. 3. Pure-Pak container showing four stages of opening and closing. Photo The Gardner-Richardson Co. 4. Pre-fabricated rectangular "bottles" with stapled-on hinged paper closure. Convenient and sanitary, their square shape permits solid packing without air spaces. Photo American Can Co.



Priorities or Preference?

When emergency demands arise, it is a mark of the ability of the business to survive, as well as a patriotic duty, for it to adapt its abilities and facilities as closely as possible to the needs of National Defense.

Among Interstate's developments which are finding increasingly wider use in a variety of defense packaging needs, are the following—

CARTRIDGE CONTAINERS—Automatic pre-fabricated partition type containers for calibre .30, calibre .45 and calibre .50.

BANDOLEER POCKETS—For loaded Springfield and Garand clips.

GARAND CLIP BOXES—Special greaseproof treated automatic boxes for bulk packing Garand clips.

SHELL CASES—Heavy weight protective containers for smaller size shells including 20 M/M.

MOISTUREPROOF BAGS—Special synthetic resin laminated, heat-sealable, bags for metal products like piston rings, requiring the ultimate in surface protection.

FOOD CONTAINERS—Pre-lined containers shipped in flat form, having unique built-in characteristics of moisture and grease protection for the packaging of dehydrated foods, shortening and other essentials.

SPECIAL MACHINERY—Automatic equipment of special design for sorting and loading cartridges, for heat-sealing and closing food containers, etc.

In normal times, a business must progress by what might be termed "priority by preference"; that is, the voluntary preference of its customers for its products.

Among the many specialized packages which Interstate in its 30-year history has been well and steadily supplying to many of the nation's large users, in many fields, are the following—

FOLDOMATIC BOXES—Knocked down, full automatic boxes in display or telescope style, in sizes ranging from a pound of candy to a pair of blankets.

SUPER-CELL EGG CARTONS—Two-in-one, divided type, moulded pulp cushioned egg cartons.

TRANSTATE BAGS—A complete specialty bag service, plain or printed, regular or moisture proof, transparent or combination cellophane bags in sizes up to 26" x 18".

STERILINED LARD & SHORTENING CONTAINERS—Knocked down, greaseproof lined, cap-type, lid containers, for an endless variety of food products, either wet or dry packed. For semi-automatic handling, or adapted to full mechanization with the ROTOSEAL machine.

LAMINATED BOARD & CONTAINERS—Economical production of foil or decorative boards, in addition to protective wax and moistureproof laminations.

COATED SPECIALTIES—Greaseproof coated VAPETEX Board for bakery products, etc., thermoplastic resin-coated wrappings and bags.



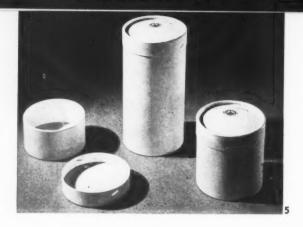


INTERSTATE FOLDING BOX CO.

MIDDLETOWN, OHIO

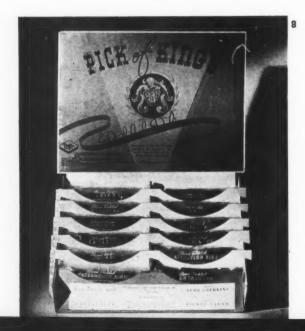
Full information on any of our products, for present or future use, gladly supplied upon request

PACKAGING CATALOG









sizes, requiring a rigid form for merchandising appearance, shipability or structural strength, are usually placed in folding cartons. Several applications of this sort are shown in the accompanying illustrations. In some instances, the transparent water-tight sheet material is laminated for reinforcement and greater strength.

Sanitation requirements

Paperboard containers for food products are usually manufactured of board specially prepared in a way to insure against contamination. The coating process, involving immersion or spraying with hot wax or similar materials, acts as a further insurance in sanitation. Great care is exercised by manufacturers to protect the containers against contamination during shipment to the packaging plant.

Decoration

Paperboard liquid-holding containers may be decorated in a colorful manner. Printing usually precedes the impregnating or coating operation. Wax coatings, of course, have an effect on the printing which must be allowed for in planning the design. The general effect is to soften tones and lighten them to a degree.

Paper container economies

Much controversy has existed, particularly in the milk field, over the relative economic desirability of glass containers as contrasted with paper containers. No clear-cut statement can be made since the relationship of costs varies with every dairy operation. In general, it may be said that the original cost of the paper bottle is less than that of the corresponding size of glass container. The cost per trip is a more debatable point, involving such factors as relative shipping costs, in view of weight differentials, bottle breakage, glass container cleaning costs, multiple trips of glass bottles as contrasted with single trips of paper containers, etc.

Paper "bottles," in their various shapes, have lent themselves to a wide variety of uses. Among products so packed are sweet and sour creams, chocolate milk, ice cream, orange and other fruit juices, cheeses, sausage meats, beans, pickles, peanut butters, jams, jellies, preserves, cake flour, dessert powders, etc.

5. Cylindrical two-piece liquid-holding container, spiral wound with slotted vents on cover side walls to facilitate opening. Photo Menasha Products Co. 6. Front, back and side views of Pure-Pak type container. Photo The Gardner-Richardson Co. 7. Pre-fabricated containers for hot foods, liquids and semi-liquid products. Slanting side walls permit "nesting" for shipment. Covers snap into groove and are lifted by wire or paper tabs. Photo Lily-Tulip Cup Corp. 8. Transparent liquid-holding heat-sealed bags as used for pickles in brine. Photo The Goodyear Tire & Rubber Co. Inc.



As the Crow Flies...

For more than three-quarters of a century many of America's leading manufacturers have found Gair's Complete service the straightest route to profitable packaging.

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FOLDING CARTONS - BOXBOARD - FIBRE & CORRUGATED SHIPPING CONTAINERS

PACKAGING CATALOG

Fibre-bodied cans



ITH the gradual and practical development of the fibre can, this versatile container now shares honors with the popular paper carton and metal container. It has been widely adopted not only for such dry products as spices, foods, drugs, cosmetics, and chemicals but has also become an important packaging unit for such liquid products as motor oil.

Selection of fibre

Because of the extensive variety of products to be packed, there can be no one standard body construction of fibre cans. Each specific product must be thoroughly analyzed and so must the fibre materials in which it is to be housed. Products that are hydroscopic, or that will deteriorate if exposed to humidity, are put into containers of moisture-proof material. Spices or foods that contain a high percentage of natural oils must be packaged in specially constructed grease-proof containers.

Types of fibre containers

The fibre cans expressly used for dry products may be divided into nine distinct types, all of which are made in a wide variety of sizes and shapes. The physical construction of each type will vary somewhat, depending upon production considerations and equipment of the manufacturers. The following constitute the most popular types:

Paper cap cans: The fibre can with a paper cap is ordinarily limited, because of technical considerations, to cylindrical shapes, although a few oval cans have been introduced into the market. This type of can is constructed with fibreboard ends, or so-called paper caps. These ends are either removable or sealed on, depending upon the requirements of the user. The top end may be fitted with a pouring or sprinkling device for dispensing the contents. The caps are furnished in a variety of colors and, within limitations, may also be embossed or printed. Labels may be applied directly to the body of the can by the maker; or the user, after filling the container, may affix the label over the flange of the cap and thus seal the package. This package has proved excellent for such staple products as salt, bread crumbs, cereals, medicinal powders purposes, and many other products requiring inexpensive but efficient containers.

A representative group of friction opening canisters (fibre bodies fitted with metal ends) showing range of eight sizes.



▲ Complete line of paper containers for cosmetics and toilet-ries.—We specialize in combination style—paper bodytransparent top—as illustrated

COMBINATION CANS >

above.

Combinations of tin and paper tin bottoms and/or tops, tin dispensing closures for powdered and granulated foods, chemicals, drugs, etc. Also allpaper cans. Sizes ½ oz. to 10 lbs.

Round Containers FOR EVERY PURPOSE



PRINTED TUBES & CONTAINERS

The label is printed directly on the spiral outside wrap—no more labels to worry about, the label is part of the package.

DRUMS

New low cost fibre drums, 25 to 200 lb. capacity.

TRANSPARENT CONTAINERS

You can see right through them, but they're rigid and sturdy—made of sheet cellulose—plain or with printed messages, in all colors, designs, trademarks, etc., right on the plastic.

TELESCOPE MAILING CONTAINERS—DISPLAY TUBES PAPER SPECIALTIES

The CLEVELAND CONTAINER Company 601 West 26th Street

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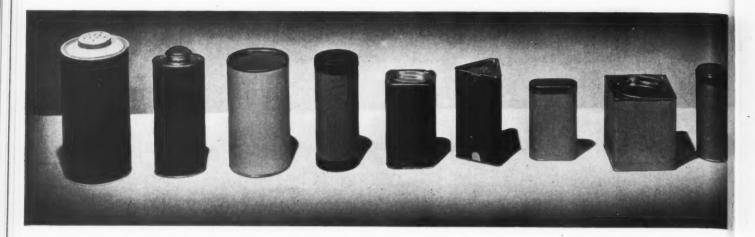
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Various shapes of fibre cans including round, square, oblong, triangular, obround and oval types. Body construction differs for various products. Fibre cans can be moisture or grease-proof and also contain liquids such as motor oil.

Friction-plug-top cans: The friction-plug-top fibre cans with metal ends seamed onto the body are manufactured with round, oblong, oval, or square bases. The plug is clamped securely in place by friction and can be pried loose without damage to the container. The throat of the friction-ring is generally curled—especially in wide-mouthed containers—to avoid any danger of cutting the fingers or hand on a raw, unfinished edge. Sometimes, to facilitate opening, the plug has a special lever or lifting device; but ordinarily, the application of something thin and flat like a knife is required to remove the plug. This type of container is used extensively for baking powder, cocoa, tea, spices, fertilizer, and powdered drugs; or anything for which a tight reclosure is desired in order to avoid accidental spilling.

Metal-slip-cover cans: The metal-slip-cover fibre can, which is made preferably on a small oval or round base, is an economical container for products requiring a full opening. If labels are to be applied over the flange after filling, the cover should have a raw edge; otherwise a curled flange is desirable. The ends can be decorated or embossed to suit the purposes of the user.

Interrupted-thread-cover cans: This so-called interrupted-thread device allows the cover to be easily removed by a slight twist of the hand, and yet when assembled, the container is securely locked. The full opening in the top allows easy access to the contents of the can. To make this type can tamper-proof a drumhead seal may be affixed to the top.

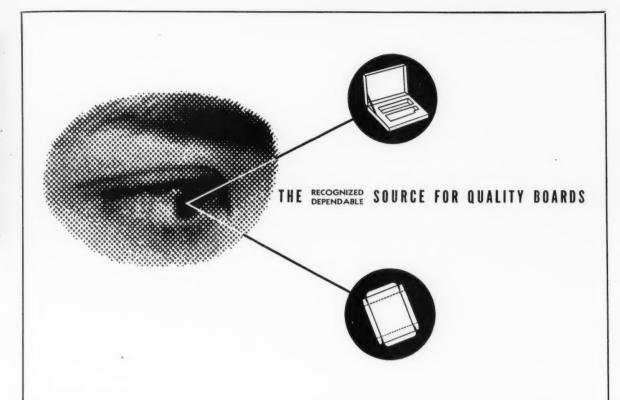
Closed-top cans: This type of can makes a tamperproof non-refillable package in that both the top and bottom are made of metal seamed onto the body. The top may, or may not, be fitted with revolving or pushslide dredges, pouring spouts, or semi-perforated knockout holes. These containers make excellent packages for scouring powder, spices, birdseed, insecticide, etc. Because of the tamper-proof feature they are also widely used as sealed containers for automotive parts such as coils, piston-rings, distributors, filters, etc.

Planetary-top cans: This can calls for a two-piece top, an under-cap crimped onto the body, and a revolving over-cap, usually of some finished metal to provide a high-lustre end of striking appearance. The tops have a variety of sifter-hole arrangements, often carried out in some design motif. This package is most adaptable to such products as talcum powder, insect powder, grated cheese, and chemicals for fire extinguishers, as it allows the contents to be removed in any desired quantity.

Raised-neck-top cans: The top of this can consists of a raised neck assembled to the body of the can, perforated with single or multiple openings, depending upon the nature of the contents. This type of container is generally used for talcum or tooth powder. Over the neck is assembled a closure which may be either a slip-on or a revolving over-cap. This raised-neck device may be designed to fit a round, oval, or oblong base, with a wide selection of tops and fittings to carry out any desired theme.

Telescope cans: Three interlocking sections are required in the manufacture of telescope cans: an inner tube and an upper and a lower outer tube. These fibre segments are fitted together so that the outer tubes act as closures for the inner tube. This package is used as a tamper-proof mailing case, with the address label applied as a seal over the line of junction of the two outer tubes.

Screw-top cans: There are two styles of screw-top cans: on one the fibre body is threaded outside at the top; on the other type a threaded neck protrudes from a crimped-on body, to which the cover is assembled. Screw caps are generally knurled and curled to fit the threaded neck.



Our complete line of folding and set-up box boards has been recognized for years as the standard for the highest quality obtainable.

We have never departed from our own high quality standards under the great economic pressures of the last decade.

We have no intention of abandoning those standards now. As long as top quality boards are obtainable, you will be able to get them at JAYPACO.

We are cooperating, like all loyal Americans, with the defense program. Where this will lead and what sacrifices may be asked of us are still questions. Needless to say, only National Defense will cause any change in our present valued customer relationships.

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Spirally wound fibre cans

The adaptability of the spirally wound fibre can is manifold since its construction allows the use of many different fibres and adhesives, thus serving the desired requirements of any number of products. In the manufacturing process, ribbons of fibre are wound around a steel mandrel, the diameter of which is the same as the inside diameter of the can to be produced. As these ribbons are wound on the mandrel at an angle, one over the other, and so placed that the top one overlaps the joint on the under ply, it is possible to produce a tube of any desired length and construction. For example, two plies of one kind of fibre would make a thin tube; while many plies of several kinds of fibre would make a heavy tube or core of any strength desired.

Since the original tube from which the bodies are made is composed of several individual ribbons, almost any combinations of materials-glassine, manila, kraft, straw chip, etc.—can be used, and a ply of any of these materials can be introduced at almost any place in the body, to meet the requirements for which the can is intended. For instance, a body can be produced with one ply of parchment paper, another of almost any thickness of fibre, and a third, of some different material, while the fourth ply may be a ribbon of colored paper, which, wound on the outside of the tube, would make a colored can. Since the adhesive is applied to each individual ribbon, almost any adhesive can be used for any particular ply of ribbon. Spirally wound cans can be made only with round bodies, because the ribbons of fibre must slip around the mandrel, but this characteristic has its merits, because it permits continuous production, at a high rate of speed, with a resultant low cost of manufacturing. After the bodies are wound into tubes (in some multiple of the length of the can being made), strip labels, i.e., multiples of single labels, are applied by hand and the cans are then cut to the proper or desired length.

Convolutely wound cans

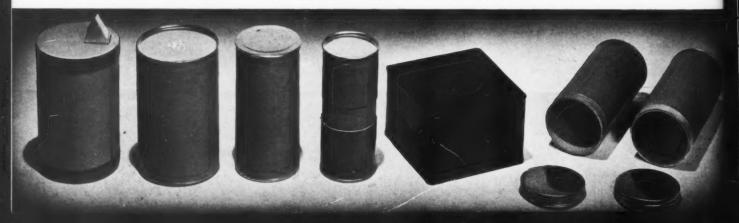
In the manufacture of the convolutely wound fibre can the ribbon is wound flush on a mandrel which revolves some required number of times and thus provides the necessary number of plies of fibre ribbon to complete the body. The ribbon is then automatically cut and the body moved along the mandrel to the position where the label is applied. During this second operation the body of the next can is being rolled. The completed body is then ejected from the mandrel, ready to receive its caps or ends which can be fibre or metal in a round body, but metal only in irregular shapes.

Recent developments have proved that the convolutely wound fibre can, may be used for motor oil. This special container is convolutely wound of strong, grease-proof liner board to form a 3-ply tube. Oil-proof, waterproof glue is utilized and the single inside seam is sealed with a newly developed moisture-proof and oil-proof resin compound. Ends of the containers are made of 100-lb. terne plate metal, crimped tightly to the fibre walls over an expanding oil-tight gasket seal. Labels of a newly developed paper (claimed to be oil-proof) are utilized and given additional protection by varnishing or lacquering. Field tests reported most satisfactory service and a number of advantages from the point of view of both the dealer and the consumer. Refilling of or tampering with containers is said to be impossible, since the gasket seal between the end and the body is such that if the metal end is forced off, the fibre body breaks away with it.

Another recent development in this type of construction automatically slips a string under the label, as the latter is being applied. This operation which slits the body as the can is wound, allows the consumer to pull the string and cut the label directly over the slit in the body. This can combines tamper-proof construction with an easy and full opening. It can be adapted to either the single-wall one-use package or the telescope body for products that are re-used.

The shape of the convolutely wound can depends upon the shape of the mandrel, which can be round, square, oval, oblong, hexagonal, triangular, or almost any shape that permits a ribbon of fibre to be wrapped around tightly and fitted snugly. Corrugated bodies are not possible, as the fibre cannot be held in the grooves during the winding. And since the convolutely wound can is made completely of one ribbon of fiber and one adhesive, it cannot be lined with parchment or glassine.

Types of fibre cans, from left to right: 1. Salt can with metal pouring spout. 2. Closed top can with punch hole sifter. 3. Planetary top can with overcap revolving against undercap. 4. Telescope can shown partially open. 5. Tamper-proof metal end can with pull string opening device. 6. Screw-top can with crimped-on threaded metal neck. All photos Sefton Fibre Can Co.



FAITH IN THE FUTURE ...

Is the Spirit of Packaging Enterprise



THEY SELL BEST IN CARTONS



LOOSE ARTICLES



OXBOARD

LOWE PAPER COMPANY RIDGEFIELD,

IS RIDGELO CLAY COATED BOXBOARD, NO. 41 COATING, WHITE TWO SIDES

WHY GOOD PACKAGES NEED

Kolding Coartons



THINGS WELL

- 1. Protect merchandise.
- 2. Provide convenient sales units for seller and buyer.
- 3. Offer individual product display.

ARTONS of Ridgelo clay coated boxboard do even more and help sell in competitive store display. They look brighter and feel cleaner. When considering packaging you should be interested in folding boxes because they are the

neatest enclosures known for such a wide variety of contents. The smooth brilliance of Ridgelo clay coated is a pleasant invitation to use only the best folding cartons. Try it and watch your customers register their pleased acceptance.

BOXBOARD

COMPANY RIDGEFIELD,

Set-up paper covered boxes

by William J. McClintock, Jr.

NY rigid paper box that is delivered in finished form is termed a set-up paper box. This type of box is delivered to the user ready for the inserting of merchandise without further processing. In contrast to the bending boxboard used for folding boxes, non-bending or rigid boxboard is used for the set-up type. Whereas the minimum thickness of boxboard for folding boxes is .016 in., the minimum for set-up boxes is .030 in. Set-up boxes can be handled and packed speedily and this combination of advantages is utilized in many packages of excellent protection and beautiful design for such merchandise as perfumes, cosmetics, lingerie, candy, stationery, hosiery, handkerchiefs, pharmaceuticals, etc.

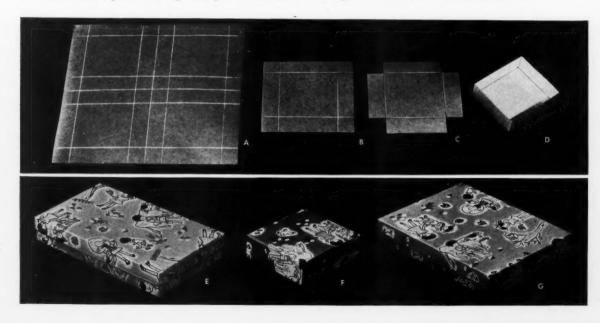
All measurements for paper boxes should be given or accepted in terms of inside measurement only (score measure). The measurements should be stated in the following order: length, width, depth; and when a fourth dimension is given it should indicate the depth of the lid. For instance, 10 \times 5 \times 2½-7/8 indicates a box 10 in. long, 5 in. wide, and 2½ in. high, with a lid ½ in. deep. For a box with a shoulder, measurements should indicate the inside measurement of the neck, followed by the depth of base and lid, for example: 10 \times 5 \times 2½ neck, 1½ base, 1½ lid.

The application of fancy papers or specially designed wraps gives an appearance of permanence and beauty to set-up paper boxes, while the combination of rigid transparent covers and set-up bases produces a box with unusual display value. The variety of beautiful papers available is almost infinite. Produced economically in rolls, from which wraps can be cut, these papers offer splendid possibilities for diversification of color and decoration in this type of box without the necessity of purchasing extremely large quantities to absorb the cost of art work, engravings, etc. Where a fixed design is required, wraps may be printed, embossed, hot-stamped, die-stamped, engraved, lithographed, photo-offset—in fact, any decoration that can be applied to paper may be used on the wrap for a set-up box. Because of the rigidity of these boxes, decorations in wool, cellophane, or wood, are used with good effect and lasting beauty.

The accompanying illustrations show the basic styles and types of set-up paper boxes. Many adaptations of these styles are possible and designers and users of boxes would do well to consult with the box manufacturer when projecting a design. Many of the styles illustrated are made in about 1,000 plants in the United States and, while all plants do not make all of the styles shown, practically all plants make the telescope box, the shallow lid type, and other commonly used styles.

The following glossary gives the accepted definitions of terms for all machines, materials, types of construction, and processes which are fundamental and current in the set-up paper box industry.

A. Sheet of boxboard is first scored to the size specified. B. The scored sheet is then broken into individual box blanks. C. These are corner cut. D. Next, they are turned down and corner stayed. The lid is processed similarly. E. Together they form the simplest type of set-up box, known as a "skeleton" box with shallow lid. F. Next type is the full-telescope lid, made by increasing its depth to that of base. F. The shoulder style is made by adding an extra base or inserting board scored to form inner shoulder.



GLOSSARY OF TERMS

Name of Material Machine or	Definition	Name of Process or Operation	Name of Material Machine or Construction	Definition	Name of Process or
Construction		Operation			Operation
Adhesive:	Any viscous substance used to attach one material to another. Those commonly used in the manufacture of paper boxes are animal glue, vegetable glue (hot		Die-Stamping Press Dividers	Machine used in reproducing de- sign or lettering from engraved plates Loose strips of paper or box-	Die stamping
	or cold), gums, dextrins, and paste		Doming Machine	board used to separate commodi- ties placed side by side Upright press for embossing or	
Baling Press Band	Machine for baling scrap Strip of covering paper around sides and ends of box, without	Baling Banding	Drop-End	doming by applying heat and pressure A box in which the end of the	
Base	Lower unit or receptacle of a paper box			base is made in two parts, one hinged to the other, or in which end is hinged to bottom	
BENDING MACHINE	Machine used for bending sides of base, lid, or tray	Bending	Drop-Side	A box with the side arranged as described above	
Blank	Any die-cut, scored and corner- cut, or otherwise partially pre-		Drum	Shell or tube with paper head, for powder box	
	pared section of boxboard, in the flat, to be formed into a box or part thereof, e.g., base, lid, or		Дитсн Тор	Lid with padded top slightly smaller than lid in length and width; set-up with shell	
Воттом	tray. Under surface of the base	Bottom setting	EASELS	Supports attached to box to hold it upright for display purposes	
BOTTOM LABEL BOTTOM PAPER	Paper attached to bottom or under surface of base	Bottom pa- pering	Edge	Line formed by junction of sides and ends to top or bottom of lid,	Trimming o
Box	A complete paper box, including base and lid; also used for base alone (see above)			base, or tray	Trimming up per and lowe edge of lid base or tray
BOXBOARD	Board used in the manufacture of paper boxes* Sub-divisions in a box formed by		ENDING MACHINE	Machine for attaching ends to base or lid. Available in single	Ending or end
OMPARTMENTS	partitions Placing lids on bases	Closing or lid-	Ends	or double model Pieces of boxboard attached to side and bottom flanges of ended	Ending or end setting
CONTAINER	Large paper box used to hold definite number of smaller boxes	8	Extension Edge Machine	Machine for attaching piece of boxboard to top of lid or bottom	Extension
CORNER	The line formed by junction of sides and ends of base, lid, tray			of base, the piece of boxboard being greater in length and width than the lid or base	8 8
Corner-Cutting Machine	For Board: Machine for removing corners from scored blanks and for cutting triangular piece from "ended" box blank, so that side and bottom flanges will bend without interference.	Corner-cutting Mitering	FLANGE	That part of a blank that is glued for attaching ends, or sides, or for joining the ends of shell blank. Also the walls of any corner box blank	
	Available in single, double, quadruple models		FLAP LID	Lid without sides or ends, hinged to base	P1 1
	For Paper: Machine for cutting corners from paper blanks used in loose and tight wrapping operations		FLIES	Strips of plain, printed, or lace paper attached to inner edge of base to cover goods or for deco- rative purposes	Flying
OVER	Upper or closing unit of a paper box		FLYING MACHINE	Machine for cutting, gumming, and attaching flies	
OVERING MACHINE	Machine used in covering, trimming, or bending boxes or parts	Covering	INVERTED TRAYS	Trays, stayed, or unstayed, placed inside base, inverted	
	Available in hand-operated and power-driven automatic models		FILLERS	Loose strips of boxboard, plain or scored, used to fill spaces not occupied by commodities	
UTTER	Machine for cutting boxboard, paper, and other materials into sheets or strips of smaller dimen-	Cutting	Frames	Die-cut or mitered forms of box- board so shaped as to form a display frame for the goods	
	sions	6	FRENCH LID	Lid with extension edge which has sides and ends less in depth	
CREASING PRESS	Machine for cutting and creasing and die-cutting or scoring blanks in boxboard	Cutting and Creasing Die-cutting		than sides and ends of base, and which fits over outside of base	
UTTING RULE	Steel strips, ground to center or side face used for cutting		GLUER HAND SHEARS	Machine for applying adhesive to surface of paper or boxboard Hand-operated knife for cutting	
UT-Scoring Rule	through stock Steel strips ground to center or side face, used for partially cutting through stock, i.e., scoring		HAMD OREARS	sheets of paper, cloth, lace, etc. Any process in the manufacture of a paper box performed with- out the aid of a machine	Hand work o
Creasing Rule	form for purpose of forming a bending line		Hinge	Strip of cloth or paper used to hold parts of box together	Hinging
LEASING AULE	Steel strips with oval face, used to form a crease or bend a line in stock		LABEL	A plain or printed piece of paper attached to box or any part thereof; distinct from top or	Labeling

A DOUBLE

RINGER

SKILL-NOT UCK

Tas, both at work and play, skill and experience result in perfection.

The Shoup-Owens organization, eld timers at their game, offer you the solution to your packaging problems.

SET-UP APER BOXES: — Being pioneers in the paper box industry, — offer a container outstanding in a cuty and appeal combined with precise and caref. Workmanship, ranging from the most inexpensive machine constructed box to the fine cuty ous handmade package. A paper box that will attract ineediate attention—producing a laster and more definite sales response.

FIBRE CANS: — Our fibre can division offers the modern fibre can with improved construction features and streamline appearance. All shapes — SQUARE, OBLANG and ROUND in a complete range, from the smallest consumer size to the largest institutional size.

We invite you to utilize our designing and manufacturing expecience is planning your next package plus the economies only Shoup-Owens can supply.

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110. Adams Street

Hoboken, New Jersey

FIBRE CANS - - - A DOUBLE RINGER IN PACKAGING - - - SET-UP BOXES

Name of Material Machine or		Name of Process	
Construction	Definition	Operation	
Lace	Paper decoration stamped or embossed to imitate lace or em- broidery		
LAP	Portion of cover paper that over- laps where ends of paper are joined on base, lid, tray, shell		
Layers	Loose pieces of boxboard used to separate horizontal layers of contents		
Lid	The upper or covering unit of a paper box		
LID SUPPORT	Tape or ribbon to hold hinged lid in position when box is open		
Lifts	Pieces of ribbon, cloth, tape or paper attached to trays for con- venience in removing from base		
Lining	Material used to finish or deco- rate interior of base or lid		
LINING MACHINE	Machine for attaching paper from the roll to surface of box- board	Lining	
LOOSE WRAP	Lid covered with paper, wrap folded and shaped on ends of box, either by machine or by hand; wrappers in one piece with ad- hesive only at edges	Loose wrap ping	
Machine Forms	Forms of boxboard, wood, or metal used in conjunction with certain machines, e.g., covering machine forms, wrapping ma- chine forms, quadruple staying machine forms, etc.		
Micrometer	Instrument for measuring thick- ness of materials in thousandths of an inch		
Neck	A shell inserted in base, attached by adhesive, and extending above the base into the lid when box is closed (see <i>Shoulder</i>)	Necking of shouldering	
Nest	Collection of boxes of various sizes, one within another*		
	Bundling and wrapping boxes in kraft paper for delivery	Package wrap ping	
PACKER	Same as Container	2 11:	
Pad	Card or layer covered with paper or cloth and having one or more layers of wadding or other pad- ding	Padding	
PADDED TOP	Extra top, covered with paper or cloth and having one or more layers of wadding or other pad- ding; attached to top of lid	Padding	
Papers	The following is a list of papers commonly used in the manufacture of set-up paper boxes: News, Book, Label, Manila, Kraft, Friction Glazed, Flint Glazed, Brush Finish, Embossed, Printed, Florals, and Fancy. For descriptions, see p. 178		
Partitions (loose)	Slotted pieces of boxboard fitted together to form a series of com- partments, and placed in base without being attached to it	Slotting	
PARTITIONS (solid)	Any construction of boxboard or other material attached to in- terior of base to sub-divide it		
Ратсн	Piece of paper or cloth over lifts, pulls, support for lid, or hard- ware inside box		
	Process of removing portion of thickness of board from shell or blank flanges	Peeling	

* According to present ruling for Freight Classification:
Unless otherwise provided, nesting means that three or more different
sizes of the article for which the "nested" specification is provided must be enclosed
each smaller within each next larger; or that three or more of the article for which
the "nested" specification is provided must be placed one within the other so that
each upper article will not project above the next lower article more than one-third $\binom{1}{a}$ of its height.
(/ a) or its neight.

Name of Material Machine or Construction	Definition	Name of Process or Operation	
Pulis	Metal handles or pieces of tape or ribbon attached to base of shelf or file boxes for conveni- ence in removing from shelves		
REENFORCING	Strip of paper or string under cover paper		
ROTARY BOARD- SLITTING MACHINE	Machine for slitting sheets of board into sheets of lesser width		
ROUND AND OVAL CUTTING MACHINE	Hand-operated machine for cut- ting round and oval tops and bottoms		
SCORING MACHINE	Machine for scoring and cutting boxboard	Scoring	
SHALLOW LID BOX	A box having a lid of less depth than the base		
SHELL	A glued blank, any shape but round tube, open at both ends		
SHELLS (loose)	Shells used to support layers		
SHOULDER BOX	Box with a glued neck so in- serted that ends and sides of base form a shoulder upon which lid rests		
SHOULDER BOX GLUING MACHINE	Machine used to glue in necks		
SLIDE BOX	Box with lid in shell form, into which base is inserted at side or end		
SLITTING MACHINE	Machine for slitting rolls of paper into rolls of lesser width	Cutting or	
SLOTTING MACHINE	Machine for cutting slots in boxboard for forming partitions	Slotting	
SLOTTING SAW	Saw for cutting slots in box- board for forming partitions	Slotting	
Stay	Material used for reenforcing corners of base, lid, or tray; may be of paper, cloth, combination (cloth and paper), wire, or metal		
STAYING MACHINE	Machine for reenforcing corners of paper boxes or parts thereof. Available in single and quad- ruple models	Staying	
STENCIL MACHINE	Machine for applying adhesive to edges of paper to be used on wrapping machine	Stenciling	
Steps	Shells or trays of varying sizes attached inside base to raise one row or portion of contents higher than the row next in front; or attached inside lid to hold articles of various heights in place		
Stops	Pieces of boxboard attached in- side of ends of lid to hold base in proper position when height of base is less than height of lid		
Таре	Woven or braided cotton material	Taping	
TELESCOPE BOX	A box with base and lid of the same depth		
Гнимв-носе	A semi-circular or triangular cut made in sides or ends to facili- tate removal of lid from base, or contents from base.	Thumb-holing	
THUMB-HOLING MACHINE	Machine for cutting thumb-holes	Thumb-holing	
TIGHT WRAP	Lid, base, or tray covered with paper, wrappers being in one piece and having entire surface covered with adhesive	Tight wrap ping	
Top Topping Machine	Outer surface of the lid Machine for attaching top or	Topping	
Top-Paper Tray	bottom paper Paper attached to top of lid. A receptacle for which no lid is made		

SET UP
FOLDING
CIGAR BOXES
TRANSPARENT CONTAINERS
LITHOGRAPHY • LETTER PRESS



LEPACO LAMINATED BOARD

MOISTURE and GREASE PROOF

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FLINTS and UNUSUAL

SURFACES FOR

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BOXES

LEBANON PAPER BOX COMPANY

LEBANON

New York Office, 51 Madison Ave.

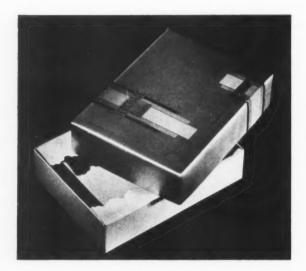
PENNSYLVANIA

New York Warehouse, Jersey City, N. J.

Name of Material Machine or Construction	Definition	Name of Material or Operation	
TYING MACHINE	Machine for tying boxes in bundles; automatic or hand operated	Bundling or tying	
Trim	Paper or cloth used to strengthen or form decorative covering for the edges of base, lid, or exten- sion edges.	(See Covering)	
Тиве	Any cylindrical shell open at both ends Process of turning-in or turning- down the edge of cover paper which extends beyond sides and ends of base or lid in process of covering	Turning in	
Wire Corner- Staying Machine	Machine for reenforcing corner	Staying	

Name of Material Machine or Construction	Definition	Name of Material or Operation	
Wire Stitching Machine	Machine for wire stitching (flat or round wire)	Stitching on flat surface	
WOOD FRAME	Strips of wood attached to inside surface of base for strengthening the upper edge	Framing	
WRAP	Paper covering for lid or base applied by wrapping machine	(See Wrapper)	
Wrapper	Process of covering base, lid, or tray with paper, by machine, or by hand, wrappers being in one piece and having part of or entire surface covered with adhesive	Tight wrap- ping Loose wrap- ping	
Wrapping Machine	Machine for wrapping lid or base in one operation	Wrapping	

TYPES AND STYLES OF SET-UP BOXES



A telescope type candy box which is loose wrapped. Note that base and lid are of the same depth. Folds at each end of the lid show that it has been loose wrapped. The top edges of the base are trimmed with paper lace. This type of box has a multiplicity of uses—hosiery, lingerie, candy, handkerchiefs, etc.



Telescope type box for hosiery. Both the base and the lid are tight wrapped. This method of wrapping is used most often for boxes such as this, which are intended for units of relatively inexpensive merchandise. Paper used for wrapping the lid is white and is printed in color with name and product identification.

106 PACKAGING CATALOG

Behind that Curtain...

Maybe tomorrow, maybe next year we'll be able to serve new customers and promote new ideas for old ones with the full selling power of set-up paper boxes.

We do know this: that time is coming. That's why this advertisement. That's why our research facilities are fully available now to develop new ideas.

Most of our production is at the service of National Defense and essential Civilian Supply. But our development department is fully at the command of those, who, like us, have their eyes on the future.

Walter P. Miller Company, Inc. Paper Boxes

452 York Avenue • Philadelphia, Pa.



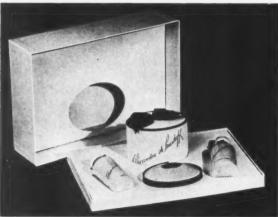
Shoe box with shallow lid. This type of box is distinguished from the telescope style by having lid of less depth than base. Both lid and base are tight wrapped. Paper covering for base is printed in light green with Peter Pan figures. Lid carries product information.



Hosiery box with shoulder. Lid is hinged and is loose wrapped with striped paper in gold and ivory colors. The base is tight wrapped in gold paper, printed with brand name. The name is repeated on the inside of the lid, but it is die stamped for added effect.

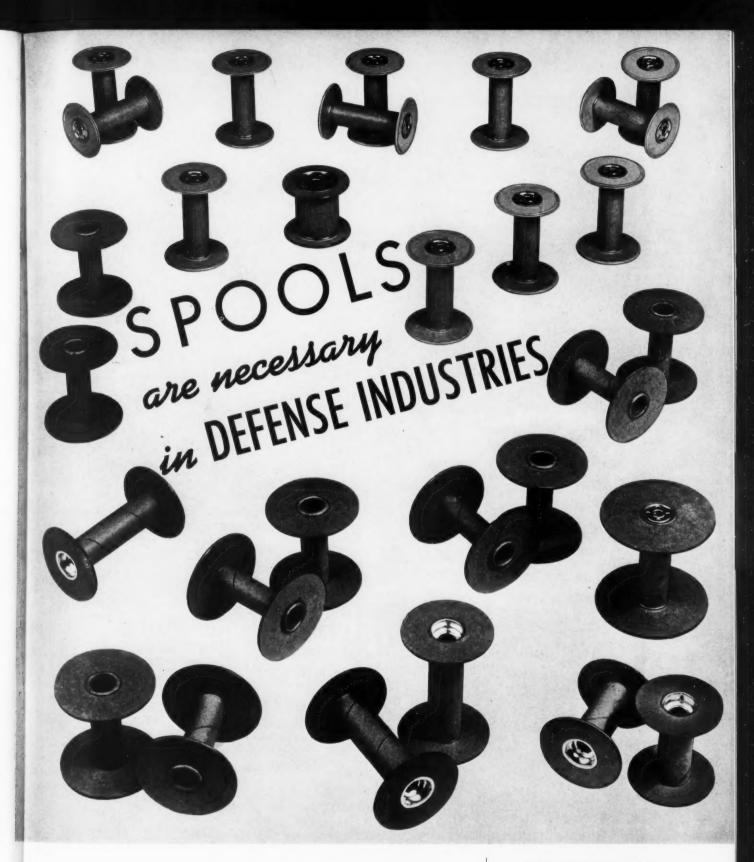


Soap box with shoulder and a hinged lid. The base is tight wrapped. The lid is banded and the top and bottom edges of the lid are trimmed with gold paper. The top paper has hot stamped decoration. Bars of soap are kept intact with a single shell into which the middle cake of soap fits.



Cosmetic box with extension edge base. There is a die cut platform which holds each item in place and prevents jostling. The lid is full telescope type into which is inserted an ingenious tray. The die cut hole in the tray fits down over the box of powder and keeps all the other items in position.

108 PACKAGING CATALOG



R. C. CAN COMPANY

SAINT LOUIS

MISSOURI

RITTMAN, OHIO

KANSAS CITY, MO.

ARLINGTON, TEXAS

SALES OFFICES

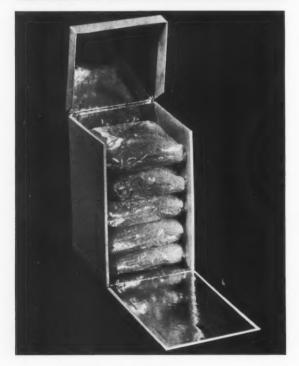
Atlanta Arlington, Tex. Kansas City Los Angeles Louisville Memphis Milwaukee Minneapolis New Orleans New York Pittsburgh Rittman, O. St. Louis



Box for cologne with shallow shoulder. Base and lid are banded, with top and bottom edges trimmed. The bottle rests on a tray within a cardboard frame. A triangle of cardboard supports the neck of the bottle. The inside lid is fitted with a pad of tan velour paper with brand name printed in gold. The top paper is embossed and the bottom paper matches the inside liner in color.



Toilet water box with a shallow base in which are inserted 4 small individual trays that form the shoulder. Base and trays are tight wrapped as well as the lid which fits snugly on the shoulder. Lid wrap is printed with the brand and product names.



Shallow lid box for bath mitts. It has a drop front and hinged lid with mitered corners. The insides of the lid and of the base are lined with heavy gold foil. The outside covering is of white flint paper. Lid and base are full tight wrapped. Boxes of this type enhance the quality of the product which they contain and make effective display pieces for windows, counters or other product exhibit space in drug or department stores.

PACKAGING CATALOG

110



A COMPLETE PACKAGING SERVICE

- Although we're the world's largest manufacturers of clay coated car-ton board, we can also make any grade of carton board you might specify for packaging and display purposes.
- Skillful designers will gladly revise or create a wholly new design without extra cost.
- 3. Bottle Carrier Cartons in stock designs or custom made.
 4. Giant replicas of your package.

Giant replicas of your package.
 Carton board packages and displays of every description.
 Special holiday folding cartons of outstanding quality.
 Whatever your packaging or display problem, phone or write our nearest office for quick, efficient service.

CARTONBOARD CONTROL



DESIGN SERVICE



CARRIER CARTONS



JUMBO CARTONS



CARTONS & DISPLAYS



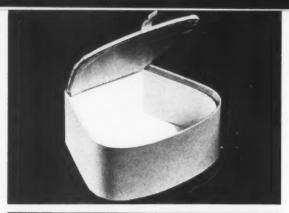
SPECIAL HOLIDAY CARTONS



A.C.M (Clay Coated) CARTONS AND CARTON BOARD

PACKAGING CATALOG





A stirrup-shape box for baby shoes. The base is covered with a light blue paper and it has a pink bottom paper. The Dutch top is covered in blue and is hinged. It rests on a shell covered with pink paper. The lid has a blue ribbon pull at the front edge.



For perfume—a shallow lid, shoulder box with drop front. Edges of base and lid are trimmed with gold paper and all the panels are labeled with ivory paper. A die cut pad is inserted in the lid as a protection for the top of the bottle. The drop front is embossed in gold and black. Although the lid is shallow, it fits down snugly on the shoulder so that there is little danger of bottle falling out when box is handled.



Handkerchief box with extension edge and a covered tray. The hinged lid has an extension edge. Particularly notable about this box is the fact that the lid has no flanges. The inside of the lid is covered with the same paper as the outside. The tray also has the same paper. Tight wrapping with identical paper throughout was done in order to keep the large lid from dwarfing the base and the tray.



Octagon-shape hosiery box with scored blank, covered with rayon in two pastel tones. A tray is attached to the scored blank, so that extension edges are left at each end. The lid may be fastened with the ribbon tie.



"-- They Say He's a Key Man in the Defense Program"

The paper industry has been called upon to supply the government with great quantities of paper for shell-casings, wrappings, bags, and cartons for packing munitions and supplies, and for shipment abroad as lease-lend materials.

Consumption by the government of an important percent of the total amount of boxboard, has caused a shortage of this material for the making of commercial cartons. The result, in our business, has been the curtailment of displays, the reduction of calipers, and principally the redesigning of cartons to make each ton of board yield more thousand unit packages.

We are cooperating with the Federal Conservation Program, designed to meet this emergency, because it is the only satisfactory response we can make to a difficult situation. We are advising our customers to observe government recommendations to avoid the alternative of drastic regulations. We feel that only in this way can everyone achieve his basic requirements.

Specifically, the recommendations we pass on to our customers are:

- Cut calipers—eliminate thicknesses by paring board down to weights needed for protection.
- Use larger units—pack more units to each carton.
- Use satisfactory but less expensive and more available boards wherever possible.
- No displays—elimination of all types of displays, except those completely functional.

Let us show you how to bring your needs in line with the Government Conservation Program.



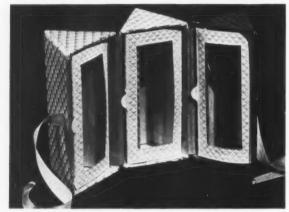
FEDERAL CARTON CORPORATION

Manufacturers of FOLDING BOXES and SPECIALTIES
638 WEST 57th STREET • NEW YORK CITY • COlumbus 5-4643

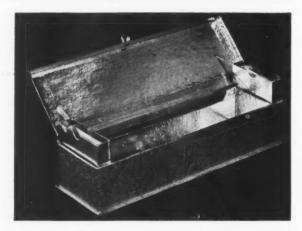
PACKAGING CATALOG



Round candy box with extension edge base which is covered with gold foil paper and has an ivory bottom paper. The lid is banded with orchid colored velour paper. Top and bottom edges of the lid have gold trimming. The Dutch top is domed and padded. Bands and bows of ribbon decorate the top of the box.



Three triangular trays make up this box for three pairs of hosiery. Trays are held together with yellow muslin hinges and are hand-covered with embossed paper. Each tray has a triangular-shaped inner tray in which there is a window. A die cut pull-tab facilitates opening. Half a hexagon is formed when box is closed. Ribbon ties are used to hold box closed.



Novelty cigarette box which holds one carton of cigarettes and two decks of cards. The extension edge base is covered with red leatherette paper, gold embossed. Base is fitted with a gold foil lined tray glued to the front flange and narrowed to allow space for the insertion of books of matches. In each end is a thumb-holed card box which is loose. An ingenious arrangement of tapes affixed to the lid and base raises the card boxes when lid is opened. Front flange has marble-like knob.



Extension edge, cylindrical perfume box. The edge is covered with gold foil and base has bottom label. A low platform is die cut, banded with ivory paper, and has narrow red trim. Platform contains small shell, covered with gold, inside of which is a lower gold-covered pad on which the bottle of perfume rests. A thin pad is applied to top of lid. (Please turn to page 118)

PACKAGING CATALOG

Look of LOOKIT. Your Customers Will

Consumers can't help looking—and seeing—when you pack your merchandise in LOOKIT boxes. Not only are these boxes attractive—they are also transparent, giving customer's glances a full view of the contained merchandise.

Their set-up construction gives them strength and rigidity—which keeps them standing-up and selling under rough handling. They are ideal for packaging golf balls, safety goggles, fishing line, haberdashery, cosmetics, toiletries, silverware and any other product which utilizes a transparent or set-up box.

Color possibilities are unlimited—both on the paper wrap and the acetate window. Both may be imprinted as desired.

QUALITY SET-UP

boxes with beautifully embossed and printed wraps are included in our complete box-making service. Leaders in a dozen fields choose us as their dependable source of supply for set-up boxes, take full advantage of our extensive design and production facilities.



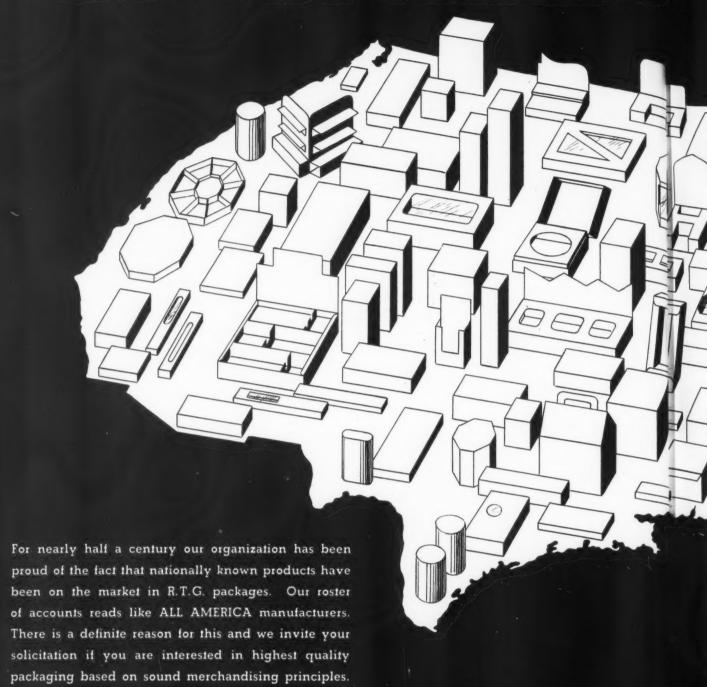
Come to

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ROCHESTER

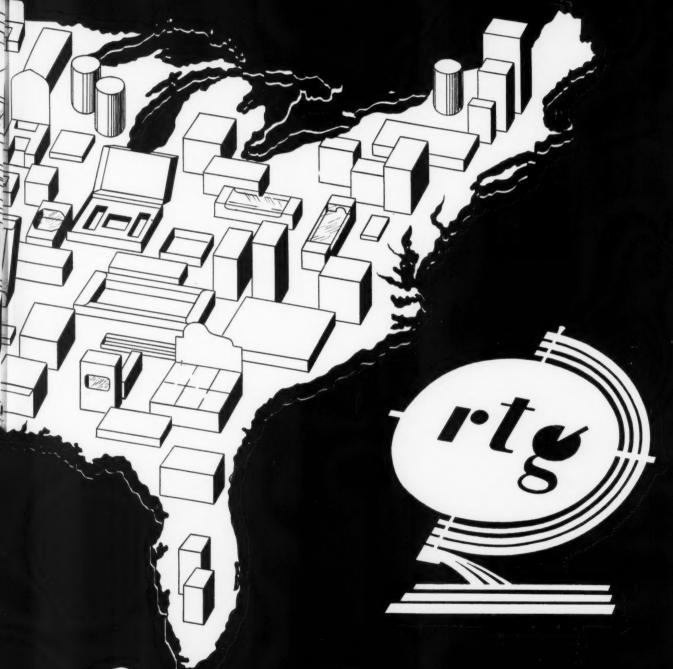
New York Office • 30 East Forty-second Street • MUrray Hill 2-3447

NATION WIDE PACKAGING

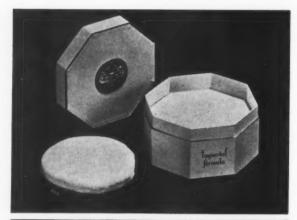


The Richardson Taylor

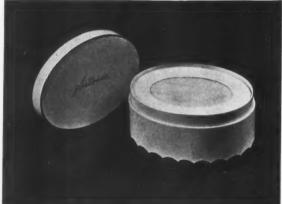
by R.T.G.



Globe Corporation
WINTON PLACE CINCINNATION ON 10



Octagon shape, shoulder box for powder. Base is banded with ivory paper which has gold trim on edges and there is an ivory bottom label. Lid top is set in an octagon shell and banded with ivory paper with red trim on edges. The powder is contained in a non-sift box inserted in the tray. The ivory paper covering the top must be cut away before the powder can be removed. Depth of inside powder box is sufficient to allow room for puff. Lid has embossed label.



An oval-shape face powder box with shoulder. The base is hand-covered with a printed paper showing a black lace edging on dusky pink and has a dusky pink bottom label. Powder may be seen through window in an inner liner. The lid is covered with pink paper and it has a black trim around the top edge. There is a printed top label with brand name in black.



Box for pen and pencil set. It has an extension edge base, covered with gold lacquered paper, which is tight wrapped. An ivory colored platform is glued to the base and is fitted with elastics. The lid is lined inside with red flint paper and die cut so that the window extends down the front flange. The outside of the lid is also covered with red flint paper.



Handkerchief chest. Two drawers are fitted in hollow walls which give the chest the appearance of permanence. These drawers are trimmed with gold paper and fitted with silk cord pulls. A complete box with Dutch top is fitted in the top of the chest with half its depth showing. The hinged Dutch top also has a silk ribbon pull and is decorated with a gold printed design.

PACKAGING CATALOG

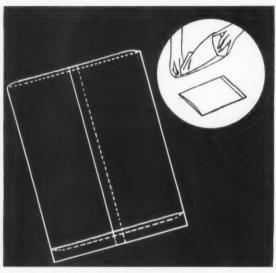


Bags		
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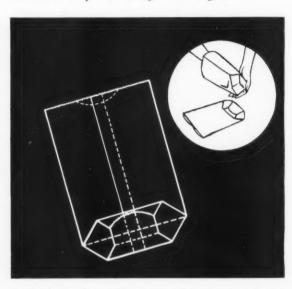
Types of bags

HESE four illustrations show basic construction of all bags used in packaging. The following pages include discussions of the many uses of bags in packaging, the

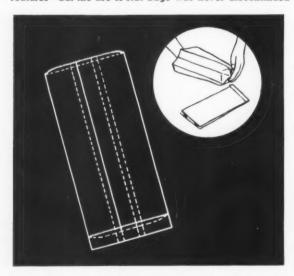
many variations of the basic types, the many materials from which bags are made, the uses for each and the methods developed for filling and closing them.



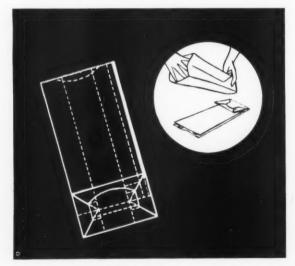
Flat bags: The first type of bag developed and the simplest in construction is the familiar flat bag. Naturally, it is likewise the cheapest to make; the bottom is simply folded under and pasted, as can be seen from the diagram above. Later, newer styles were developed with improved features—but the use of flat bags was never discontinued



Satchel bottom bags: The feature of this bag is its bottom construction which, when filled, provides a flat base. Named because of its resemblance to a leather satchel traveling bag in shape, it offers distinct advantages to the bag user for many products and results in a neater looking package. It is used principally for sacks and nail bags



Square bags: An adaptation of the flat bag with the same simple folded-up bottom. The square bag has a bellows fold or accordian pleat in the sides, reducing the width of the closed bag without reducing its capacity. Its simple construction likewise lends itself to high speed production and consequently it can be manufactured at low cost



Automatic self-opening bag: The last word in bag making, the automatic bag combines desirable features of previous types. It has the bellows fold in the sides and an improved bottom. When filled it makes a neat squared-up package with a stable base. The automatic bag may have a center seam or, as shown here, may be made with a side seam



Let's look into your packaging problem together!

Medican
Paper Goods Co. 50 YEARS OF SERVICE
Factories: Kensington, Conn. and Chicago, III.

HE paper bag entered the field of packaging before the Civil War. Used first as a convenient and economical method of carrying items from store to home, it takes its place today along with glass jars, tin cans, and cardboard cartons as a basic material in modern packaging.

Some of the reasons for the increasing importance of the paper bag in recent years in packaging are:

Automatic packaging machinery has been developed for the filling and sealing of paper bags.

Methods of heat-sealing for paper bags have provided a tighter seal.

3) Better protective papers have been made available for paper bags.

 Protective coatings have been introduced to make paper bags more efficient.

 Better designing and printing have given the paper bag more shelf appeal. The present scarcity of tin, burlap, foil, and other packaging materials has brought about the substitution of paper containers, and as defense efforts are carried further, it is expected that this practice will increase. The efforts of O.P.M. are directed toward the use of lighter materials as a means of conservation, and the substitution of paper containers fits in with this program.

At first thought, "bag" ordinarily connotes the brown paper bag which is used by every corner grocer, but this does not properly fall into the formal classification of paper packaging. Better examples of the latter are the bags used for: Coffee, Flour, Sugar, Potatoes, Rice.

The definition of paper packaging comprises those paper bags that are filled and sealed in quantity before they reach the point of retail sale. The filling and sealing may be done at the factory, refinery, or roasting plant, or by the grower, receiver, or wholesaler. When the





1. Department and specialty stores make unlimited use of flat bags in many sizes for notions, millinery and a variety of merchandise. 2. At first thought, "bag" ordinarily connotes the brown paper bag used by every corner grocery. 3. Paper bags for packaging are usually defined as those filled and sealed in quantity before they reach the point of sale. Best examples are those used for coffee, sugar, flour, potatoes, beverages, etc. Photos, courtesy of Union Bag & Paper Corp.



MUNSON QUALITY BAGS

Cellophane

find out about the leakproof "Super-Seal" the colorful "Rainbow" and the many other Munson styled bags ...

THE MUNSON-BAG-COMPANY

1384 WEST 117TH STREET

CLEVELAND, OHIO.

PACKAGING CATALOG

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4. Various types of paper bags used by retailers. Top, left to right: shopping bag with twisted paper handles, garment bag, bru bags of heavy, moisture-repellent kraft. Bottom, left to right: nail bags used for hardware, beverage bags with carrying handles, bread bags for round and long loaves, long narrow liquor bottle bags. Courtesy, Southern Kraft Corporation.

paper packages reach the retail outlet, they are stored, displayed, and sold to consumers as a complete unit.

Variety of paper available

A variety of papers is available for bags according to the requirements of the product to be packaged. Kraft papers are used for strength, with a double thickness of kraft paper where added protection is required; e.g., the double-walled kraft bag for packaging of-sugar at the factory. The second thickness of paper assures added protection against outside moisture, dust, dirt, and other contaminating matter, and also enables the package to withstand handling in shipping, storing, and delivery.

Where the product contains oils which would seep through paper, an inner protective liner of glassine is often used. Examples are the bags used for coffee, to prevent oils from coffee coming through the outside paper and bags used for salted nuts. Waxed paper liners are used in other cases to prevent grease or moisture from finding its way out of the package.

Where especially greasy products are to be packaged, a parchment paper is often used. Lard is packaged in such a bag; so is sausage meat. Many other combinations of papers are available to meet particular conditions. A study of the conditions of packing, storage, shipping, and handling will determine the paper or combination of papers to be used.

Methods of filling and sealing paper packages are outlined in another section of this book (see page 522). The use of filling and sealing machinery has contributed much to the usefulness of paper as a packaging material.

Large size multi-walled bags are used as shipping containers for many products; e.g., coffee, sugar, and rice. The individual units for consumers are packed in these paper shipping containers for bulk shipments. In the case of sugar, 60 lbs. are packed in units of twelve 5-lb. packages, six 10-lb. packages, or thirty 2-lb. packages. Shipping containers for coffee hold 24 1-lb. bags.

Paper bags are widely used as a wrapping material, in retail establishments, where individual purchases are placed in the bag so they can be carried home conveniently. Usually the only closure is formed by folding over the top of the bag. Some of the familiar forms used in this manner are:

Grocery bags (you carry your supplies in them)
Paper sacks (used in the super-markets)

Notion bags (for flat, small objects)

Millinery bags (same shape, larger size, for hats)

Garment bags (used by dry cleaners)

Liquor bottle bags (long and narrow to fit bottles)

Candy bags (used in every candy store)

Bread bags (just fits a loaf of bread)

Window bags (with a transparent window)

Shopping bags (large, of heavy kraft, with satchelbottom and twisted paper handles, for carrying.

Beverage bags (short, automatic, with twisted paper handles, for bottles of soft drinks)

Bru bags (automatic, heavy, moisture-repellent kraft for wrapping products taken from refrigerators)

Nail bags (automatic, heavy kraft, shorter than grocery bags, used for nails in bulk and other hardware)

There are four basic shapes of paper bags. Each is illustrated on page 120. Whether used for packaging or wrapping, paper bags fit into one or more of these classifications.

The paper bag is among the most economical methods of packaging. Machines for making bags are so highly efficient today that it is possible to buy as many as 30 to 50 standard size paper bags for one cent. Modern high-speed machines are capable of meeting almost any production schedule to fill orders quickly under normal conditions. A single bag machine—depending upon the type of bag being made, the grade of paper used and the machine itself—is capable of turning out in excess of a third of a million bags a day, ten every second.

When bags began to take their place as standard containers for tea, coffee and spices and other food products, the value of printing became important from an advertising standpoint. Today practical printing processes as well as specialized equipment have been developed for printing product and trade identification on bags.



omes

Design is only half the answer to your packaging problem. Of equal importance to the success of the product is the package itself. Constant research on papers, paper coatings, Cellophane, Pliofilm, and other material factors enables us to know the perfect package for your use.

Continual scientific laboratory tests are absolute assurance that any Royal package is the right one for the purpose intended.

If you have any question regarding your package in relation to your product, let us help you, both in research and design.

Write for further information

Package for YOUR PRODUCT

THOMAS M ROYAL & COMPANY
PHILADELPHIA U S A

Transparent bags

CELLOPHANE

HEN some of the first transparent wrapping material, called fenestra paper, was imported from Belgium about fifteen years ago, it was considered so valuable that the first manufacturers to adopt this new packaging material for egg noodles guarded it in a safe.

The growth of the use of transparent materials and the reduction in cost of producing such materials during the past decade have been most significant developments in the history of packaging. Endless possibilities have been opened up for the packaging of thousands of products heretofore sold in bulk.

The transparent bag is one of the most widely used and convenient types of containers. Aside from temporary governmental restrictions on these materials for nonessential purposes during the present emergency, there are practically no limitations to the uses for transparent bags except those set by the size, shape, weight, fluidity, or other characteristic that is peculiar to the product to be packaged.

The chief advantages are: visibility, protection, economy, increased sales appeal, and longer selling period for seasonable items.

Among the most commonly used materials for transparent bags is cellophane. This completely transparent sheeting is lustrous, durable, flexible and impervious to air, grease and dirt. Bags made of this material and the characteristics of each are as follows:

Plain transparent (P.T.): All products not affected by moisture may be packaged in plain transparent cellophane bags, usually designated as P.T. Such products

Long, narrow cellophane bags for dehydrated soups.
 Fresh spinach, all washed and ready for the sauce pan, visible, yet protected from dirt in a cellophane bag, with identification printed on stapled tab.
 Small machinery parts, protected from grime and rust—easily identified.
 Popcorn in crimped-heat-sealed bags of cellophane, printed in bright colors. Photos Courtesy, E. I. du Pont de Nemours & Co., Inc.; Celanese Celluloid Corp.; The Dobeckmun Co.; Shellmar Products Co.; Milprint, Inc.; Transparent Products Co.









6 PACKAGING CATALOG

Practice makes perfect!

We are manufacturers of heavy duty multiwall paper bags; bulk shipping containers carrying up to 140 lbs. of various commodities, capable of meeting both afloat and ashore all requirements of the common carriers. From casual observation of these drudges of industry lying in warehouse or marine terminals, one would never suspect the enormous amount of technical effort and field work used to bring these bags to their present state of perfection.

Only certain carefully selected wood is used by our paper mill—thus insuring the highest grade of bag paper.

Elaborate and costly technical controls govern the entire paper making process; at every step tests are conducted to insure quality.

A like system of rigid inspection and control is also employed by our bag factory.

The finished product is subjected to drop tests and simulated transportation tests far in excess of the wear and tear which a bag would experience in actual use.

The result is a product that will give the service for which it is designed.

All Bagpak Bags are closed with the Sealed Cushion Stitch closure, an exclusive Bagpak feature. These bags have won highest packaging honors in the All-America Packaging Competition four times in different years. There is a reason for this....

One Man Package
Easy to Handle



TRADE MARK REG. U. S. PAT. OFF.

...its knowing how!

Since you have to spend for containers, why not get the most for your money? There is no premium for Bagpak Bags!

BAGPAK

220 East 42nd Street

New York City

* Trade Mark Reg. U. S. Pat. Office

include a long list of fruits and vegetables, candies, apparel accessories, dry goods, soaps, stationery, noodles, popcorn, moth balls, spices, seeds.

Moisture-proof transparent (M.T.): Any product that should retain moisture or be protected from atmospheric conditions, requires the protection of moisture-proof cellophane bags, designated as M.T. Such products include baked goods of all kinds, candies, (caramels or fudge), metal items that are subject to corrosion, rubber goods, etc.

Moisture-proof heat sealing (M.S.T.): Bags made of cellophane with heat-sealing qualities inherent in the sheet. This material can be sealed to itself without the use of adhesives by the application of heat.

Color: Cellophane bags are available in eight colors: red, green, blue, pink, orange, amber, orchid, and violet.

Printing: Transparent cellophane bags may be printed by letter-press, aniline, or gravure, in one to six colors, by means of type set-ups, zincs, halftones, or process plates. (One company prints up to seven colors by gravure.)

Either the inside or outside of the walls of the bag may be printed. Printing on the inside of the film known as reverse printing is used when a brilliant effect is desired and when there is no possibility of the printing inks affecting the packaged commodity. Duplex bags are usually printed in reverse on the inside of the outer wall.

Construction of bags

Cellophane bags are made in three standard styles: flat, square, and satchel bottom.

Flat bags: Used principally for packaging light objects such as nuts, potato chips, popcorn, etc., where bulging produces an illusion of larger quantity. Flat bags are also used for hosiery, gloves, notions and clothing accessories where there is no need for extra tucks.

Square bags: These enjoy diversified use because of the many possible variations in their length, size of side tucks, and width of face. Used to package all manner of food items, textile products, hardware, etc.

Satchel bottom bags: The most extensively used made in the largest variety of stock sizes. For packing such items as peas, beans, rice, nuts, sugar, spices, hard candies, tapioca, prunes, damp-packed cookies, rubber toys, macaroni products, etc. When filled, satchel bot-

tom bags have flat bottoms that permit upright display.

Single or double wall: All three types of bags (above) may be obtained in either single or double wall (duplex) construction. Duplex bags are used for extra protection against shipping or handling hazards and where weight or bulk of the packaged commodity make necessary greater container strength. Specific protection requirements are met by having inside and outside walls of the bag made of different films.

Closures: Transparent bags may be closed by twisting, heat-sealing, crimping, stapling or with cellulose tape. Cardboard headers are often used, especially on plain bags, as part of the closure. They may carry the name and trade mark of the product, and often some promotional or required informative copy. Holes may be punched through the header so that the bags may be hung on special display racks.

Sizes of bags

Transparent bags may be made up to order in virtually any size in widths from $1^{1}/2$ in. to 14 in. and in lengths from 3 in. to $17^{3}/4$ in.

Unprinted bags are available in stock sizes which are fairly well established throughout the industry. The number by which these bags are designated indicate their nominal capacity, but it is obvious that the capacity of the bag varies with the bulk of the product to be packed.

- Flat bags: 1-oz., ¹/₄-lb., ¹/₂-lb., 1-lb., and 2-lb. sizes, as well as in a size designated as No. 1 Peanut and designed to hold 1 oz. of nuts.
- 2. Square bags: same as above plus a 6-lb. size, and four special small sizes.
- 3. Satchel bottom bags: designated as $^{1}/_{4}$ -lb., $^{1}/_{2}$ -lb., and I-, 2-, 3-, 4- or 5-lb.

Specially printed stock size bags are usually available in minimum quantity orders of 10,000 or more of any one particular size.

Transparent bags may be filled by hand or by machinery. Granular products, such as sugar, small confections, seeds, etc., are loaded by the use of a hopper or a funnel-loading device. Many excellent automatic weighing and loading machines have been developed for filling transparent bags.

GLASSINE

BECAUSE of their semi-transparent quality, due to certain treatment in fabrication (see section on Papers), glassine paper bags deserve an important place in this classification of transparent bags.

Bags of glassine are made in standard-type construction or in special types and are available in many sizes. They are used widely in many industries because of their excellent protective qualities.

Glassine bags are given their maximum degree of

transparency and gloss, and their grease-proof, moistureproof, and heat-sealing characteristics by means of lacquer and wax coatings.

Many of these lacquer-coated glassine bags are used extensively for the same purposes as cellophane, e.g., containers for potato chips, popcorn and small confections, which require a high degree of grease and moisture protection.

Waxed glassine bags used as liners for cartons are a

Seum Gontainers

for SALES APPEAL and PRODUCT PROTECTION



Our non-tarnishing cotton-lined paper bage give complete protection to Silverware, Dresser Sets and similar articles with highly polished or enameled surfaces.



Metal and Plastic Cases retain their factory-fresh, unmarred beauty when packaged in these flannel, rayon and cotton-lined paper Sewn Containers.



White Shoe Cleaners for sunny days and Purse Rubbers for rainy days—each in its own compact leatherette case.



This group of varied products illustrates the versatility of the Sewn Container—nothing too large or too small for this type of packaging.



Dressed up in flannel bags with drawstrings and snap fastener, this Fishing Reel and Pipe are going places.



Articles such as Compasses, Manicure Implements and Metal Rules should have suitable cases, such as the above in leatherette.

SEWN CONTAINERS have become a vital factor in the important task of selling merchandise. They identify a product as worthy of careful packaging and carry a message of quality to the consumer.

A few examples of how SEWN CONTAIN-ERS fit into the picture appear on this page.

Consult us if you think a SEWN CON-TAINER might help in the presentation of your product to the public.



593 EAST 137TH STREET NEW YORK, N. Y.



Lacquer-coated glassine flat bags with heat-sealing and moisture-resistant qualities for popcorn and other highly hygroscopic products. Photo The Menasha Products Co.

mainstay in the manufacturing of cereals and crackers, because liners of this material assure long shelf life for these products and keep them fresh until they reach the home of the ultimate consumer.

Glassine takes attractive color printing in accurate register, and is strong enough to stand the strain of all stages of high-speed machine wrapping processes. It is available in several colors. If chlorine-bleached white papers should become scarce during the coming year, it is predicted that many packagers will turn to bright amber-colored glassine.

Because of their clean, crisp, translucent quality, glassine bags are in constant demand for packaging gloves, hosiery, lingerie, notions, hardware, surgical instruments, candies, foods of all types and hundreds of other products—too numerous to list here.

RUBBER HYDROCHLORIDE

N the field of transparent packaging, rubber hydrochloride sheeting offers many special advantages. It is impervious to, and consequently not affected by dilute acids, air, alkali, brine, grease, normal heat and cold, moisture, mold, oil, and water. In addition, it is dimensionally stable throughout the entire humidity range, durable, non-explosive, and inflammable only slowly and with great difficulty. It takes printing easily, has great tensile strength, shows good resistance to puncture, may be closed by heat-sealing, sewing, or adhesives.

Rubber hydrochloride sheeting is made in a crystalclear transparent type as well as in a wide range of transparent and opaque colors. It is not a coated material but homogeneous; that is, the same substance throughout. Because of this fact, heat-sealing effects an actual fusion of the material and creates an air-tight bond stronger than either sheet. The moisture-proof quality that keeps flavor inside and air outside, together with rapid, thorough sealing, has brought hundreds of flavorsensitve products into the transparent packaging field. Special inks for printing the surfaces of rubber hydrochloride sheeting provide many opportunities for display.

The two most common types of bags made from rubber hydrochloride sheeting are the regulation flat and square

(or gusset) forms. Open-end pouches, resembling a shortened satchel-bottom of the conventional type, are used for the packaging of soft or semi-solid products such as processed cheese. The open end is usually folded and sealed to form the completed package.

Rubber hydrochloride bags, laminated or otherwise, enclosed within paper containers have proved successful for the packaging of many products, notably coffee. Laminations of rubber hydrochloride sheeting with paper and foil are also used in bag form.

Outstanding among new developments is the use of rubber hydrochloride sheeting alone or in combination with other materials such as foil and paper, for the packaging of dehydrated foods. Millions of packages of dehydrated soup have won public favor since the introduction of this new material. Impervious to grease, this material allows the inclusion of chicken fat and meat stock with dehydrated vegetables in a single unit. Dried or smoked fish, which release free oil during warm weather or under the heat of electric lights, are also successfully packaged in rubber hydrochloride bags.

The packaging of liquids such as lubricating oil or pickles in brine, is a distinctive, new development in rubber hydrochloride sheeting. Cradled in cartons, these inexpensive, transparent containers show amazing resistance to breakage or leakage. Duplex bag is used.

Recent research points favorably to the successful utilization of rubber hydrochloride for the vacuum packing of such products as coffee, where air must be kept out of the package to protect the flavor of the product. The dense molecular structure of this rubber derivative sheeting, and its property of forming an hermetic seal, provide the basic characteristics necessary to maintain a vacuum over a considerable period of time.

1. Rubber hydrochloride sheeting, because of its particular characteristics, is well suited for the packaging of drug products. 2. Because they may be sewn and embellished with bindings, ties and ribbons, rubber hydrochloride bags have distinctive re-use features as merchandise containers. Photos The Goodyear Tire & Rubber Co.





POINT PROTECTION

THERMOSEAL Lamofilm

TBOOMEN'S
INSTANT MIX
"HOT CHOCOLATE" WITH IRON AND VITAMINS B AND D ADDED

Lamofilm THEHHUSEHL

Net Weight 1 oz. Ingredients: Jugar, cocoa, dried skim milk, salt, artificial flavoring.

This envelope contains added 90 U.S.P. units vitamin in in pyrophosphate.

This envelope contains added 10 u.S.P. units vitamin in the pyrophosphate.

Made by The Barden Commany New York N.Y.

Made by The Barden Commany New York N.Y.

Benj C Betner Company DEVON, PENNA., RICHMOND, VA., OKLAHOMA CITY, OKLA.

PACKAGING CATALOG







Bags of rubber hydrochloride sheeting have many advantages for food packaging because of its imperviousness to acids, air, alkali, brine, grease, normal heat and cold, moisture, mold, oil and water. Photo The Goodyear Tire & Rubber Co.

Because it is soft and durable and can be sewed, rubber derivative sheeting has opened a broad new field for economical yet distinctive re-use or "merchandise-container" packaging. Very unusual and colorful bags for the packaging of merchandise are now being prepared by sewing. With high-speed sewing equipment, it is possible for one operator to turn out many such bags.

There are innumerable possibilities for the fabricating of these re-use packages, ranging from the simple, inexpensive heat-sealed types to the elaborate sewn bags embellished with bindings of colored tape, ribbon ties, zippers, grommets, snaps, slides, and draw-strings. A wide variety of opaque, transparent, and metallic colors

and many kinds of printing and designs can be used.

There are literally thousands of applications for these re-use merchandise-containers and a broadly receptive market awaits them. Manufacturers find they have a triple appeal: in transparency, which reveals the merchandise; in protection of the contents not only from dirt but also from deterioration, because the material is moisture-proof; and in durability, which offers a definite additional value and consequently an extra sales appeal.

As a practical instance, by packing a bathing suit in one of these rubber-derivative containers, it looks attractive; the bag keeps the silk, wool, and elastic in good condition; and can be re-used to carry a wet suit.

Metal foil bags

HE metal bag consists of a thin sheet of shiny, flexible aluminum laminated to paper (glassine, grease-proof, bond, cellulose, etc.) and formed into a bag. The metallic surface is usually exposed and when this is printed in bright colors, it makes a package having powerful eye-appeal on dealers' shelves.

Surpassing the value of the metal bag in eye-appeal is its remarkable protective properties. Foremost among these protective features is the fact that the metal bag excludes all light, which otherwise might cause rancidity and spoilage. Such products as potato chips and salted nuts, for example, are especially sensitive to light, only a few hours of exposure being sufficient to cause a photochemical reaction which results in rancidity.

A second important feature of the metal bag is its high resistance to the transmission of moisture. In one reported test, metal bags of potato chips, after four hours' continued exposure to saturated atmospheric conditions (95–100 per cent R. H.) at 100 deg. F., showed only 0.99 per cent absorption of moisture as compared with 18.70 per cent absorption by a non-metallic bag under identical conditions. Metal bags also resist insect infestation.

Metal bags are made in both the square type and flat type and both are available in the duplex style, that is, with an inner liner of glassine, parchment, or other papers.

The bags are used either inside an outer paper carton or can, in which case they are unprinted; or as a single container when they are printed in one, or more colors.

Heat-sealed metal envelopes are being sold in increasing quantities for the packaging of dehydrated soups, vegetables, and fruits. The metal bag with its protective qualities and eye-appeal is especially adapted to the packaging and marketing of dehydrated products.

Metal bags exclude light, often a cause of rancidity and spoilage in food products. Photo Reynolds Metals Co.



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SPEAKING OF

PROTECTION ·

Inion laper lags:

une the First Line of Defense

in Product Packaging

Packages have quite a tough time of it. More often that not they are called upon to face unfavorable conditions in shipping, handling and storage. Even on the retail shelf they are not entirely immune from the onelaughts of climatic changes, dirt, dust and other like unfriendly circumstances. Then, too, they are frequently subjected to rough treatment at the hands of both the retailer and the consumer. And in the face of all these adversities the package must still be able to stand up and take it!

The package you select for your product is no exception—but if the package of your choice is a Union Paper Bag you can rest assured that your product will be adequately protected. Union Paper Bags are tough; they have what it takes to put up stern resistance; they'll convoy you product safely to its ultimate destination:

The amount of protection a particular product—your product, for example—requires is an item we like to investigate the roughly before recommending the type of paper package best suited to safeguard your merchandise. You can count on us as an ally; we'll be glad to sit in on your own "Defense Commission" whenever you give us the word.



RINGART CAKE FLOUR

UNION BAG & PAPER CORPORATION WOOLWORTH BUILDING NEW YORK N. Y.

Textile bags

BURLAP bags are made from jute. Most burlap comes from India, although before the war limited quantities of European-made goods were available. The only limitation on the supply of burlap recently has been the shortage of shipping space and the uncertainty of future developments in the international situation.

The principal uses for burlap bags are for the packing of potatoes, seeds, beans, fertilizer, meal, grain, sugar, and other commodities in bulk. Burlap bags are made from many different weights and widths of material.

The most common weights are $7^{1/2}$ oz., 8 oz., $10^{1/2}$ oz., and 12 oz., and the usual widths are 36 in. and 40 in. Special weight burlap is available for extra strong bags.

A tubing of burlap has been designed to replace piece goods as a protective wrapping for rectangular and cylindrical packages. The use of it avoids the hand sewing required for piece goods. To adjust the tubing, it is fitted over the top of the article to be packaged and fastened at the bottom with a wire tie, then pulled up on the sides to take up the slack, fastened with a wire tie at the top, and finally cut from the roll just above the upper wire tie.

Laminated water-proof bags

These bags are made from either cotton or burlap with a paper lining attached to the cloth by an adhesive. Any of the various constructions used in making cotton or burlap bags may be employed in making laminated bags. The bags may have one or more plies of paper lining, attached by special adhesives. These bags may be made air-tight and thus will retain the product in its

original form by keeping moisture both in as well as out. They are also sift-proof. They are used for packing special cements, chemicals, food products, fertilizer, minerals, powdered soaps, meal, seeds, etc.

Open-mesh bags

These bags are a comparatively new development. They are made from strips of tough paper, spun into yarn and woven into open-mesh cloth. They may be woven also of cotton fabric material. These containers are used extensively for fresh fruits and vegetables such as oranges, apples, potatoes, and onions. In larger sizes, they have proved valuable for the shipment in bulk of fresh vegetables under refrigeration. The sizes for consumers are available in many brilliant colors. They are advantageous to the retailer since they can be filled at odd times out of rush hours, so that he does not have to count fruit, for instance, while his store is full of people. The factor of visibility is an added appeal.

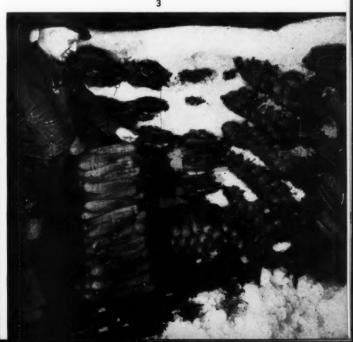
Textile bags have certain characteristics which make them economical and practical under given conditions. They are light in weight and easy to handle. Their tare-weight is frequently 80 per cent less than that of wooden containers of equivalent capacity. Savings of from 8 to 9 per cent in freight have been recorded when these textile bags are used.

Textile bags can be printed with attractive multicolor effects for identification of brand and informative data. New inks have been developed for flour bags which permit washing out all design for re-use.

Burlap bag used for seed, potatoes, beans, fertilizer, meal, sugar, grain, etc. 2. Laminated water-proof
bag made from cloth attached to paper by an adhesive. 3. Open-mesh bags are used for the refrigerated
shipments of fruits and vegetables. Photos, courtesy of Bemis Bro. Bag Co.







Revolutionary

PIE PACKAGE SAVES TIME, CUTS YABOR COSTS, UPS SALES, DECREASES STALES



PELLAR PIE is but one of the scores of situations in which DOBECKMUN designers, artists, plate makers, color blenders and printers have cooperated toward the accepted goal of all free enterprise: Progress and profit.

PACKAGING SERVICES TO HELP YOU

1. Printed "Cellophane" in Rolls and Sheets. 2. "Cellophane" Bags and Envelopes, printed and plain, single or duplex. 3. "Zip-Tape," machine applied. 4. "Zip-Wraps," pre-applied on plain or printed sheets. 5. "DOPLEX" Lamination, soil-proof, brilliant, permanent. 6. "Cellophane" Pouches, printed or plain. 7. Printed "Cellophane" Bread, Cake and Sweet Goods Wrappers. 8. Technical and merchandising advice on any transparent packaging problem.

Nickle pie packages that stack, attract, sell . . . for a 40% sales increase; a 20% decrease in stales . . . to dominate a highly competitive market!

This is but one of many packaging triumphs in which The Dobeckmun Company has played its part this year. These—plus its whole-hearted share in National Defense, where Dobeckmun personnel, facilities and experience are playing their individual and collective parts.

You may—or may not—have an immediate packaging problem. Regardless, isn't *NOW* an excellent time for you and our representative in your field to get acquainted? You incur no obligation.

If conventional transparent film packages don't fill your requirements check the special film laminated papers which Dobeckmun has pioneered. We are happy to work on any of your packaging problems.

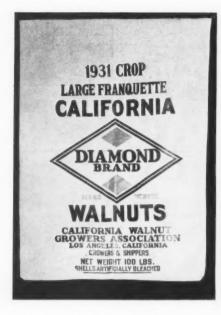




The DOBECKMUN Company

3305 Monroe Ave., Cleveland, Ohio

Western Plant - Oakland, California







1. Thousands of pounds of California walnuts go to market in these 100-lb. cotton bags. 2. Cotton mesh bags for popular 50-lb. pack of onions. Strength combined with openness of weave give the sack many advantages. 3. Cotton packaging is gaining favor for toilet preparations. Eau de cologne is not only slipproof in wet hands with this cotton bag wrapper but also attractive. Photos Cotton Textile Institute.

Cotton bags

by Charles K. Everett

Y actual count there are more than 500 different kinds of cotton bags used for packing an even greater number of commodities. They range in size from tiny tea bags and the conventional mailing sacks for samples to the giant 200-lb. capacity containers for fertilizer, flour, and other commodities sold in bulk.

At the present time there is a marked trend to cotton bags partly because the present world situation has upset both the American and the international trade practices and conditions. Supplies of burlap are uncertain and many chemicals essential to the manufacture of paper are rather restricted. Aside from these considerations, however, the cotton bag continues to gain in favor in many fields strictly on the basis of its own merits. Cotton sacks now possess numerous improved qualities that have followed in the wake of technological progress in the manufacture of all types of textiles.

Advantages of cotton

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Cotton bags have an important re-use value to recommend them. This inherent "plus value" is found in practically every type, kind, and size of cotton bag, because there is none too small nor too large to be put to useful purpose after its first intended use. This special quality was emphasized only recently when the Office of

Production Management issued a public appeal asking that cotton bags be either tagged or printed in colors that can be easily washed out in order to facilitate the re-use of the bags in commercial channels.

An additional value in cotton bags is their superior appearance, because cotton is synonymous with cleanliness. In the minds of people generally cotton bags have long been employed as containers for such important and essential foodstuffs as flour and sugar. The growing popularity of cotton bags is illustrated in the open-mesh red or orange cotton bags for the citrus fruits, which not only protect but also actually enhance the appearance of the contents. During the 1940-41 shipping season more than one-third of the Florida citrus crop was shipped in these cotton bags—in place of other type containers. This same type of bag is also being extensively used for the shipment of other fruits, vegetables, and nuts.

The third major advantage of cotton bags is their combined durability, strength, and high resistance to tears, bursting, breaking, and slippage. A notable swing to cotton bags is found in the shipping specifications for manufacturers of fertilizer and flour, shippers of edible cottonseed and cornmeal, and growers and shippers of rice, beans, and numerous other farm products.

Many specialties are now being packaged in cotton

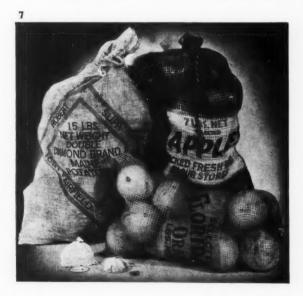
bags, among them bath salts and cosmetics. Experiments are now being conducted on various types of cotton containers to determine the possibility of using them to supplant steel drums in the shipment of various liquids, even oils and gasoline. It is well known that cotton fabrics can be treated to make them absolutely watertight. Cotton bags with water-proof paper linings are commonly used for the shipment of many products of pronounced hygroscopic qualities.

In normal years about 600,000,000 yards of osnaburgs, sheetings, and print cloths are used in the manufacture of bags. With burlap imports dwindling as a result of a lack of cargo space on the long route from India and new uses for bags increasing, indications are that over the next year textile mills will be called upon to supply at least 250,000,000 yards of cotton fabric to the bag manufacturers in addition to the large amounts that they have already contracted to deliver. No estimates are yet available as to how much goods will be required for sandbags for the defense program. In all likelihood, large quantities of osnaburgs processed to resist mildew will be required for this purpose alone.

Among the fabrics that may be used for the manufacture of the vast variety of cotton bags are sheetings, osnaburgs, drills, print cloths, and tobacco cloths. All of these may be used as gray goods, bleached or starched, or back-filled. Advice on appropriate selection and current prices of stocks available for various types of bags

may be obtained from the manufacturers.

4. These 100-lb. cotton shipping bags are crepe-paper lined to prevent acid from reaching the cotton, in the case of fertilizer, and to prevent outside moisture from being absorbed by contents, in the case of salt. 5. Cotton mailing bags are available in all sizes and shapes. Sewnin envelopes contain correspondence; tags provide address space. 6. Cotton bags may be printed in colors that can be washed out and thus give re-use value to the fabric. 7. No "pig in a poke" buying for customers at stores which feature produce in open mesh bags.

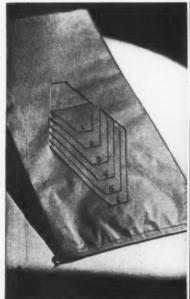








PACKAGING CATALOG







Six-ply multiwall bag

Pasted valve bag

Sewn valve bag

Heavy duty multiwall paper bags

by W. E. Scott

NITED States industry now uses over six hundred million heavy duty multiwall paper bags annually, carrying all types of commodities. Materials ranging in value from a few cents per pound up to 80 cents per pound are shipped in these bags daily over the common carriers. These materials range from comparatively inexpensive crushed and pulverized rock products to fine delicate foodstuffs needing the utmost in protection.

Shipping weights

The principal shipping weight in these bags is 100 lbs. of commodity, although many shippers are finding this type of container to be ideally suited, from both the economic as well as the utilitarian standpoint, for units ranging in weight from as low as 20 lbs. up to 140 lbs.

Construction of bags

Heavy duty multiwall paper bags are constructed of from three to six walls of kraft paper, depending upon the weight, density and physical characteristics of the product they are intended to carry. Each ply or wall of paper is properly arranged and fabricated in tubular form, one within the other, so that each bears its share of the burden. Greater flexibility and strength are obtained by using a multiple number of walls in relatively light basis weights rather than a few walls of heavier paper. For this reason, the average heavy duty multiwall paper bag is constructed of a number of sheets, ranging in basis

weight from 40 to 70 lbs. each—the most frequently used paper being sheets in the 40- and 50-lb. basis weights.

Types of multiwall bags

There are two types of these containers in general use. These are the valve bag and the open-mouth bag. The valve bag is factory-closed. That is, it has been closed at both top and bottom at the point of manufacture. The closure is made by either pasting or sewing. A small opening called the "valve" is left at an upper corner and the bag is filled in the shipper's plant by means of special packing machines which force the material into the bag under pressure. When filled, the internal pressure of the commodity forces a flap of the bag material across the opening, thereby effecting closure and the bag is ready for shipment. This is a fine container for certain pulverized materials.

The open-mouth bag is factory-closed at the bottom only and, like the valve bag, this closure is made by either pasting or sewing. The top of the bag is left open, ready to receive its contents at the filling station in the shipper's plant. The top closure, after filling, is generally effected by sewing, using machines especially designed for sewing paper bags or, in the case of less expensive commodities where sifting is not a factor, by manually tying the tops with either wire or twine. By reason of its large open mouth, which permits easy filling, this type of bag enjoys very wide use as a bulk shipping container for hundreds of commodities of prac-

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tically all types and physical characteristics, ranging from those mentioned in the preceding paragraph to coarse and even non-free-flowing materials.

This is a major consideration when developing a bag for certain hygroscopic products. Kraft paper is, in itself, resistant to water and moisture to a considerable extent. These bags will shed water as contrasted with the absorbent action of the textile container. This is especially true when a certain grade of water-resistant kraft is used as the outside wall. Atmosphere moisture-vapor is another matter, however, as it will penetrate the tightest sheet of untreated paper. To guard against this, one or more walls of several different moisture-resistant sheets are incorporated in the construction of the bag, which result in a moisture-resistant kraft paper bag container.

Unusual uses

The heavy duty multiwall paper bag is used ordinarily as a bulk shipping container for those commodities that are dry, powdered or granular in character and which can be mechanically flowed or spout-poured into the container. However, a few years ago witnessed the beginning of their use as bulk shipping containers for materials having post-hardening characteristics, such as rosin and certain asphalts which are poured into the bag

in a liquid state at astonishingly high temperatures, without damage to the bag. When cooling and subsequent hardening takes place, the bag in effect is a tightly wrapped package. The advantage of this type of bag for these materials is at once self-evident. They are easier to handle than barrels, require less space to store a given amount of commodity and have a tare weight of 1 per cent as against a tare weight of over 20 per cent in the case of barrels kraft paper bag.

Packing practice

The use of new and improved packaging machinery has played no small part in the rapid development of these containers. Valve bags are packed on special types of automatic packers. Open-mouth bags are packed on machines which automatically weigh, fill, close and seal the material into the bags. There are also several machines that will perform any part of this packaging cycle. For instance, if the shipper already has weighing and filling equipment which he wishes to continue to use, then there is a packer available to complete the cycle that will automatically close and seal the bags. This wide choice of equipment and different combinations of packaging machinery now make the heavy duty multiwall paper bag equally available to the small, as well as the large shipper and on an efficient basis.

Merchandise envelopes and packets

N the bag man's vocabulary, a flat bag ceases to be a bag and becomes an envelope when its ends are diecut instead of serrated, to give special shape to the flaps. Such containers, when used for packaging purposes, are known as merchandise envelopes or packets. They offer:

- To the manufacturer: a means of protecting his product and safeguarding its identity all through the distribution process.
- To the retailer who buys in bulk or large unit packages a convenient small unit in which to dispense small quantities to ultimate consumers.

Merchandise envelopes and packets are of invaluable aid in packaging such products as the following:

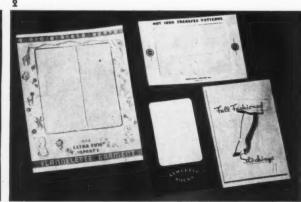
- Individual portions of, e.g, powdered chocolate for hot drinks at soda fountains and in restaurants.
- 2) Small quantities of seeds, drug products, minute watch parts, phonograph needles, etc.
- Small quantities of powdery substances, which must be completely enclosed to prevent sifting.
- 4) Flat objects of light weight, such as hosiery, gloves, collars, dress patterns, dress shields, notions, fishing flies, etc.
- Samples of many products distributed in small quantities for promotional purposes.

Merchandise envelopes are available both in open-end or open-side construction, either with or without flaps, depending upon the nature of the product to be packaged.

1. Merchandise envelopes safeguard the identity of the product all through the distribution process. They are an invaluable aid in packaging individual portions such as powdered chocolate used at soda fountains.

2. Transparent window envelopes in which product is visible. Photos P. L. Andrews Corp.







and estimates today. No obligation, of course.





3. Miniature envelopes for watch parts and face powder samples. Some of these envelopes are less than 1-in. square. Photo P. L. Andrews Corp.

In size they vary from tiny 7 /_s in. by 1 in. envelopes with a center seam, for minute watch parts, to 7^{1} /₂ in. by 10^{1} /₂ in. envelopes of general utility accommodating one or more pairs of hose, lingerie, etc.

Aside from their purely utilitarian function in pro-

4. Tablet packs, heat sealed between two sheets of cellophane or foil. Also packet for small quantities of powdery substances, protected by rubber hydrochloride sheeting. Photo Ivers Lee Co. 5. Heavy-duty envelopes for hardware and machine parts. 6. Die-cut enve'ope for dress length of material. Photos P. L. Andrews Corp.







viding a unit package, many of these envelopes are used to give the products sales appeal. Therefore, they are made of all types of papers in a wide variety of color, finish, weight, and texture. Many are made of cellophane and glassine. Some are elaborate affairs of paper with die-cut windows of cellophane or glassine. The surface can be decorated by any type of printing or lithography, in any colors possible on the material used.

A patented type of packet has been used for a number of years for packaging pharmaceutical products such as vitamin capsules, aspirins, etc., as well as cocoa, coffee, face powder, etc. Paper, cellophane, rubber hydrochloride, metal foil and various other thermoplastic resin coated materials are utilized. The packaging material and the product are placed in an automatic machine which produces a complete packaged unit, containing one or more tablets or a measured quantity of granular or powdered material, heat-sealed within a segment of cellophane or other sheet.

Another type, likewise patented, utilizes two opposed films of material, heat-sealed completely around tablets, pills, capsules or similarly shaped products. It may be produced in lengths two units wide and up to as many as 14 units long. It is particularly applicable to products extremely sensitive to atmospheric changes, such as effervescent and dehydrated compounds, drugs, etc.

Both types are nicked for convenience in opening and thus a single dose or portion may be detached, without reducing the protection afforded the remaining units.

A similar type of package is likewise available for powders, crystals and granules. The machines producing these packages are installed in packaging plants when production is large enough to justify such installation. In many instances, it is found preferable to ship the product to the machine maker's contract packing department and then to re-ship either directly to consumers or distributors or back to the original source for packing into sales containers.

A newly developed variation of the heat-sealed packet is produced by feeding two continuous strips of rubber hydrochloride-lined foil into a high-speed machine that automatically inserts the tablets between the strips, heat-seals it into its own envelope, then cuts the packet apart and automatically affixes the labels.

Tasty Delicious Fresh Delicious, tasty, crunchy, crisp, are all excellent illustrative words. Yet one look at your product tells a greater story, more convincingly than all the words you could corral together. Your product in crystal clear Cellophane bags tells a sales story completely, quickly, emphatically---for added all important value, Cellophane offers your product protection from dirt, dust, germs, and moisture. Take inventory on your package today. If you're not satisfied with the sales, or the protection it offers your product, send your problem along to Package Engineering Department, Cellophane and Waxed Bag Division. 4175 KINGSHIGHWAY MEMORIAL BLVD., ST. LOUIS, MO.

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Bags—special types

HE foregoing divisions of this section cover general classifications of bags used in packaging. Many special types of bags, however, deserve brief mention because they do not come in these classifications.

Bags for liquids: There are a number of containers on the market that utilize rubber-derivative sheeting in bag form for the retention and preservation of liquids, solids in brine, or semi-liquid products. Considerable

Mountiness Startes and Startes







research and experimentation are devoted to these products, and the requirements of national defense will undoubtedly see further expansion in the near future.

Tarnish protection: Anti-tarnish papers of various kinds (i.e., papers formulated to be free of sulphur) are being made into flat bags of many sizes to provide protection for individual tarnishable items and are being used extensively for packing silverware. This development is a progressive step over the former use of these materials as wrappings. The use of anti-tarnish bags provides a neater and more lasting protection and is therefore desirable because it makes many products more readily identifiable and salable.

Cotton-lined bags: To protect the delicate surface of mirrors, china, and glass, and to protect silverware from tarnish, excellent cotton-lined bags have been made available during the last few years. The cotton is first bonded to paper and the completed padded sheeting is then worked into bag shapes, usually with sewn edges.

Automatic bag with transparent panel: To

Automatic bag with transparent panel: To provide the appeal of visibility for a variety of products, automatic bags are made with a panel of cellophane the entire length of the bag.

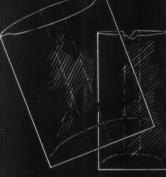
Sample mailing bags: Many small bags of various materials are now being made as direct mail pieces for samples, promotional stunts, etc. These have a mailing card attached to the bottom, carrying the advertising or promotional copy and a space for name and address.

Over-size and odd shapes: For an unusual shape—a long narrow bag for an umbrella, a huge cellophane bag in which to display a grand piano or an automobile—certain companies are equipped to fill the order.

1. Tea bags of fibrous paper. Photo National Urn Bag Co.
2. Direct-mail bag with address tag. Material is synthetic plastic sheeting. Photo B. F. Goodrich Co. 3. Protective bag of rubber hydrochloride sheeting laminated to paper used for tea package. Photo The Goodyear Tire & Rubber Co. 4. Bag of rubber hydrochloride film used to protect and preserve celery. Photo The Goodyear Tire & Rubber Co. 5. Tarnish-proof bag of cotton bonded to paper used to protect silver, etc. Photo Cottonluxe Mfg. Co.



5



FLAT STYLE BAGS, supplied with die cut lip, thumb notch or cut straight at top, without lip.



ome.

TRADE MARK REG

As pioneer converters of "Cellophane," the Humitube Manufacturing Company is widely known as the centrally located source for a complete line of bags, envelopes, pouches, cigar tubes and transparent drinking straws.

Ready to serve you with stock size bags or with containers especially designed and printed to fit your specific packaging problem.

"HUMITUBE"— the original crimp sealed pouches, of which millions are used for complete cigar protection, are also economically taking hundreds of small items to market.

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SQUARE STYLE BAGS, supplied with die cut lip or

cut straight at top, in a large range of sizes.

DUPLEX STYLE BAGS, using combinations of grades and weights of "Cellophane" to form double wall bags, are available.

Bag closing and sealing methods

by E. G. Kuhn

BAG, like a bottle, has only one opening. If its walls are sufficiently strong for the intended purpose and its seams are sufficiently tight, it will afford adequate protection to the product, subject only to one consideration—namely, the effectiveness of its seal. If the seal is weak, it will not matter whether or not the bag was strong. If the seal is difficult to open, the consumer will find little satisfaction in the other good points of the bag. If the seal is difficult to re-close and the product is one which is not consumed in a single serving, consumer dissatisfaction can well be anticipated.

Because the bag closure is so vital to the proper functioning of the bag as a container, bag manufacturers, machinery manufacturers and packagers have worked hand in hand to develop closures which would solve the difficult problems confronting various packagers. Ingenious structures are today available providing closures fully adequate to meet virtually every problem. High-speed machinery is available to form and apply these bag closures.

Bag construction, materials and equipment will vary in almost every separate case which might be considered. It is, therefore, our purpose in the paragraphs which follow to present only a brief outline of some of the more widely used seals or closures employed on the modern retail or consumer sizes of bags.

It can be assumed in reference to each type of seal that maximum packaging economy, as well as standardized effect, is possible only through the use of the equipment which in almost every case has been developed concurrently with the introduction of the seal, or later as a means of adapting it to modern production requirements.

The Allison closure: Seals contents with a triple fold which is further reinforced by a strip of gummed tape. Folds are pressed firmly against contents while tape is rolled down bag sides. Good protection for product and easy stacking.

The Betner seal: Employs a tin tie strip which is attached in an exposed position to the bag top by a machine which completes the regular over and over fold operation and then folds in a metal tie offers re-sealing advantages.

The Delta seal: Folds bag top to produce oblique overimposed folds and in manner which when cut according to instruction produces a pouring spout for contents. The top of the bag when sealed presents a flat surface well adapted for stacking.

The Sealtite closure: A simple and extremely practical over and over fold which produces a compact, flat topped package with excellent merchandising appeal. Adaptable for intuck or gusseted bags of either paper, cellophane or foil, a tight, sift-proof closure is claimed.

The Seal-Tie closure: A modified use of the metal strip here preserves the re-sealing advantages, but confines the use of this feature to the secondary closing of the bag. The primary seal consists of an over and over fold securely pasted flat against top. A compact package with good display value.

The square top or flat closure: (Also known as the Hesser), uses a card which is placed inside the bag in most cases. The bag top is folded down and sealed by gluing with a top label (not gummed) glued on in addition. This type may be varied in at least two ways. For easy sifting products like sugar, the gluing is done in a different way and sometimes the top label is left off. Then the outer wrapper is die-cut, folded and glued top and bottom in a manner suggesting a band label which extends around the face of the bag.

The Tin Tie closure: Supplements standard bag construction with a paper covered strip of metal, which patented feature is licensed to various bag manufacturers on a royalty basis. Offers excellent re-sealing advantages at some sacrifice of absolute protection of contents. Wide variation of finished package effects obtainable. Automatic machines have now been developed for applying this closure.

The wire staple: An economical and, in certain instances, an entirely acceptable closure for both paper and cellophane bags. Classified as tamper-proof, although offering little resistance to moisture.

The Bagpak cushion stitch closure: Used only on paper bags, especially of the multiwall type. This requires a machine to apply and, in combination

Allison closure

Tin Tie closure

Deltaseal closure

Sealtite closure









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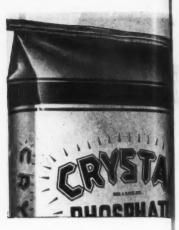
Square top or flat closure



Wire staple closure



Metal clip closure



Bagpak cushion stitch closure

with a machine sewed snake stitch, this closure is stronger than the walls of the bag.

Each type of seal illustrated and described has certain advantages which should be taken into careful consideration not so much on the basis of general merit, but rather from the standpoint of meeting the particular requirements presented by the product itself, the market it serves, competitive packaging and similar vital factors.

Heat-sealing materials

The increasing use of bags formed of transparent cellulose or acetate sheeting, rubber hydrochloride sheeting and similar heat-sealing films has brought about a rapid development of heat-sealing closures and methods of applying the same. The simplest of the heat-sealed bags is the pillow type formed from a tube of transparent sheet and crimped at either end between hot plates to achieve a seam. Transparent bags are also made in the flat, square and satchel bottom shapes and all may be heatsealed for closure. Two general types of heat-sealing equipment are available. One locks the bag ends between heated jaws. The second heat-sealing unit passes the bag through one or more pairs of heated rollers.

Heat-sealing may also be applied to waxed papers,

waxed paper bags, waxed glassine bags or bags treated with some type of thermoplastic adhesive.

Methods of bag closing

With the exception of the stapled bag—and this too may be closed by automatic instead of hand equipment—all of the closures shown require machine units for sealing. Such units for folding and sealing are usually integral with or included as a part of the weighing equipment customarily used.

In the closing of the larger size bags, there is a definite advantage, provided, of course, that production conditions are equal, in machine versus hand closing of bags. According to actual figures, obtained at one plant where both operations were used, the cost of machine sewing is approximately one-third that of hand sewing.

In general, the consideration of bag closures is of equal importance with that of the material from which the bags are made and their construction. It is essential, then, that manufacturers of bag closures and machines for forming them be freely consulted.

Comparative checking points

Bags, as used by manufacturers and shipped sealed from the factory, must be judged by much more severe standards than would be applied to the ordinary bag used by the retailer or to the manufacturer-shipped bag carrying a single unit of merchandise. When powdered or granular material is bag packed, the closure becomes the all-important point.

In considering closed bags of these types, the following may be taken as checking points: 1. Secure closure; 2. recloseability; 3. sift-proofness; 4. convenience in stacking; 5. convenience in packing; 6. cost of necessary equipment.

Checking against these points, one type of closure may be indicated in one instance and another logically chosen for a different product and different marketing or manufacturing conditions. Additional checking points, related perhaps more to the bag, but dependent in part upon the choice of closure, are: 1. ability to take and hold a permanent shape; 2. ability to accept printing on all sides of the bag; 3. ability to accept and maintain an attractive design, both for store display and in the consumer's hands.

Left. Square bag, filled and closed with automatic machine. Pasted closure. Right. Satchel bottom bag, closed by tying. Photos Courtesy The Consolidated Packaging Machinery Corp.



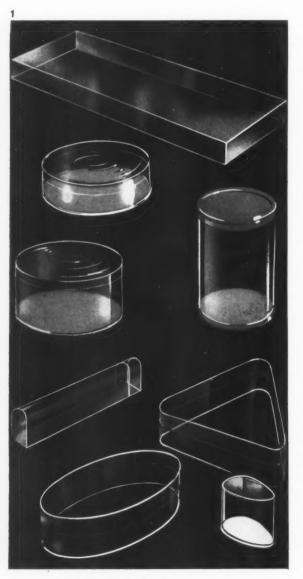


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Rigid plastic sheeting

HE advantages to be gained by transparency and the use of plastics have always attracted packagers and those interested in the development of new packaging materials. Thus, package development had several widely separated periods which have been marked by a transition from opaque to transparent packages.

The main reason which led to the development and introduction of transparent containers was, of course, the search for a sturdier, yet transparent housing for products best sold on their visual appearance. Thus, while a good deal of competition has existed between transparent containers and standard varieties of opaque containers, a



large part of the volume in the transparent field has been built around products formerly left completely unwrapped or merely wrapped for convenience in shipment and intended to be unwrapped for store display. Transparent rigid containers are widely used for confectionery, bakery products, cosmetics, and a myriad other articles.

The development of these containers found them to possess advantages in addition to transparency which further served as contributing factors towards their choice. In the field of sampling, rigid transparent vials and jars are used because of their superior resistance to breakage and their light shipping weight. Rigid transparent boxes are often specified because they permit better window display, prevent the handling of merchandise, or permit easier identification.

A primary consideration, when the use of a transparent package is contemplated, hinges on the question as to whether the product will benefit by full visibility. If it is a product ready for use, colorful and attractive in appearance, and of a nature that is self-explanatory, the rigid transparent container may well serve to increase display and sales. If, on the other hand, the product is one which is of a nondescript or unattractive appearance, manufacturers will obviously do well to discard all thought of transparent packaging in favor of the opaque type which permits them to visualize, on the wrap or label, the satisfaction to be gained in using the product.

Secondary considerations in the use of rigid transparent packages are in the protection they offer the product during demonstration. Consider, for example, the transparent box used for textiles, where it is desired to show the texture, color, weave and design of the article, without permitting the customer to handle and, perhaps, soil the merchandise. Transparent rigid containers also permit easy identification of merchandise in which a wide variety of colors or types is offered. This same quality of making selection easy provides a re-use value for the transparent container which opaque containers do not possess. Women who utilize transparent boxes can instantly tell just where any particular item may be found. Thus, they have found wide popularity as canisters in kitchens, hat boxes, shelf containers, shoe boxes, etc.

Rigid transparent containers have, of course, a number of limitations other than their relatively high cost. To cite a single instance, manufacturers of hygroscopic products cannot always utilize these packages because some of the materials from which they are made are moisture

1. Some of the various types of rigid transparent containers—rectangular, round, and irregular shaped—illustrative of the wide range of styles which are entirely feasible to manufacture of a wide variety of products. Drawing P. P. Kellogg & Co. Division, U. S.Envelope Co.

PACKAGING CATALOG

150

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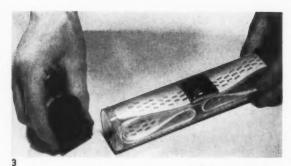
50 AVENUE L • NEWARK, N. J.

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PACKAGING CATALOG



2. Drawn type of cylindrical container fabricated of transparent cellulose acetate sheeting. Photo W. C. Ritchie & Co.



3. A belt of vinyl material in a box of transparent vinyl sheeting. Photo Carbide and Carbon Chemicals Corp.

permeable. Certain types of hard candies will rapidly become sticky if packed in rigid sheet plastic containers. Other products, which contain moisture that must be retained in the product, are likewise excluded from the group which may utilize this type of package, unless other moisture-proof protection is provided, as in the case of cigars which are wrapped in moisture-proof cellophane or rubber hydrochloride sheeting.

Transparent rigid containers must be handled more carefully than ordinary cardboard containers because of their tendency to become scratched and chafed. Care must be exercised in shipment so that the packages are placed in containers with soft tissue paper or some other protective substance to separate every package wall.

Most material from which rigid transparent containers are made are rated by the Board of Fire Underwriters as slow-burning materials, requiring no additional insurance coverage or limitations. In this respect, they are considered no more hazardous to store or ship than ordinary newsprint or cardboard. This is not true of those containers made of reclaimed film stock—cellulose nitrate—which is highly combustible material.

Transparent containers are made from cellulose acetate, ethylcellulose and vinyl sheeting. Cellulose acetate was the first rigid plastic sheeting extensively used for transparent packaging and displays and more recently the ethylcellulose films and vinyl resin films have been developed and utilized for this purpose. The materials are supplied to manufacturers either in sheets or in continuous-length rolls. The sheet material may be had in varied thicknesses, in gauges ranging from .003 in. upward. Continuous-length materials are available in a number of standard gauges including .003 in., .005 in., .0075 in., .010 in., .0125 in., .015 in. and .020 in. Heavier sheets of cellulose acetate or vinyl are available on order.

The standard rolls of transparent sheeting as produced by the various suppliers have the lowest prices. They have definite advantages, such as simplifying the stock problem and making it possible to obtain samples of boxes in a hurry. The supplier can also take care of rush shipments of standard rolls much faster than cut-to-size pieces. The disadvantage of standard rolls is that for certain sized pieces there would be a great deal of waste which could not be utilized. In this case it would be most economical for the manufacturer to buy cut-to-size pieces from the supplier.

The suppliers of rigid plastic sheeting also supply slit-to-size rolls which can be utilized to advantage on special equipment. They will also slit a standard roll into a number of narrow rolls for a nominal charge, which will be economical if the total width of the slit-to-size rolls is almost equal to width of standard roll.

When fabricators wish to print surfaces of vinyl sheeting, it is necessary for them to obtain sheets in matte finish on at least one side. After printing on the matte surface, it is often necessary to re-press the sheet in order to bring out the glossy surface usually desired. Such pressing is carried on between chromium plated planishing plates in a multiple platen steam-heated press. Ethylcellulose sheeting can be readily printed by regular letterpress methods with the use of a special ink developed for this material. This ink has a solvent base which penetrates rapidly into the sheeting and gives much speedier drying than can be obtained with oil base inks which dry slowly by oxidation. This saving in drying time has proved very profitable to printers of transparent sheeting.

The general fabrication processes used for cellulose acetate, vinyl resin and ethylcellulose sheeting follows. They fall into two main categories: the set-up method of cementing or sealing several cut pieces together and the drawing method of molding the sheet in a single operation in dies under the action of heat and pressure. Charts showing comparative amounts of material consumed by the two methods are shown in Tables I and II, page 165.

Set-up rigid plastic containers

Cylindrical containers: For the bodies of cylindrical containers, the transparent sheet is cut into rectangular pieces, one dimension being equal to the intended circumference plus $^{1}/_{8}$ in., or more when the gauge is heavy, for the seam overlap. The dimension

representing the height of the container is cut $^3/_{16}$ in. to $^3/_{8}$ in. longer than the finished height to allow for the material taken up in the formation of the edge finishes or beads. The amount of allowance is dependent upon thickness of stock used and size of bead to be formed.



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Ges in touch with

CELLULOID

THE sparkling clarity that reveals the product so seductively is not all that LUMARITH PROTECTOID has to offer. True, it boasts a volume of sales success stories for rigid containers like those pictured here. But its permanence, its amazing performance in deep draws and forming keep costs down as well. As an added advantage, you get pioneer experience in this field.

CELANESE CELLULOID CORPORATION

Packaging Division, 180 Madison Avenue, New York City. Sole Producer of Celluloid*, Lumarith*, and Lumarith Protectoid*.

If you are working on a transparent package . . .

*REG. U. S. PAT. OFF.

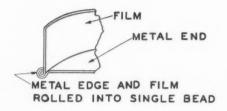


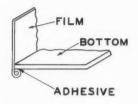
PACKAGING CATALOG





4. Types of double beaded transparent plastic side walls and the different methods of attaching bottoms to construct container.





5. (Left) Crimping transparent side wall to a metal bottom to form a cylindrical container. (Right) Method of sealing bottoms to an inside bead and use of adhesive.

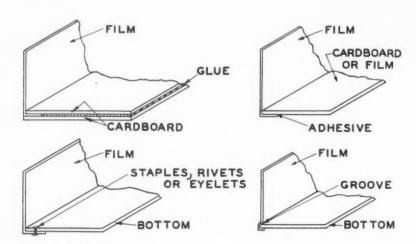
The bottom of the container is formed of a disc of transparent material cut with a "chop out" die in a power press. Bottoms of cardboard are often used. The body of the telescoping cover may be cut similarly to the body of the container, allowing about $^{1}/_{32}$ in. greater in diameter, but it is more likely to be drawn to the proper shape and size from a single sheet.

The rectangular blank is mounted around a cementing mandrel of required diameter and overlapped for the seam. The mandrel is a smooth chromium or nickel plated tube held in a horizontal or a vertical position. Along the top is a rigid bar which, under spring tension, firmly holds the blank along the overlapped seam. A camel's hair brush, a ruling pen or a cement pencil, dipped in solvent cement, is drawn along the seam opening. The other edge is lapped over and pressure applied. Drying time varies from approximately \(^1/_4\) to 3 minutes, depending upon the thickness of the material.

Aside from large containers such as hat boxes, etc., most cylinders are made up on heated rather than cold mandrels, which materially speed up the cementing operation since the 15-second to 3-minute drying period is not required. Here the adhesive can usually be best ap-

plied by means of a wick type fount or narrow metal wheel, such as is commonly used in many of the so-called "table gluers," revolving in a well containing a cement. Beading: Beading is a form of edge finishing in which heat and pressure are used to turn and form the edge of the transparent sheet material into a firm round curve. Machines are available for beading continuous lengths of material before they are cut into container blanks. Simpler machines are used to bead the cut blank before forming into tubes. Beading dies and wooden mandrels with 1/4-in. thick sheet metal facings may be used to apply a bead after the tube has been cemented. The choice of method depends, in large measure, on the quantity of containers being produced and the particular style and structure of the container.

Bottom and top discs of transparent sheeting or cardboard may be attached to the cylinder by various means. One of the most common methods is to place the disc on the top surface of a cementing form over which the beaded cylinder is slipped until the bead comes into contact with the disc. A brush is used to apply solvent cement to transparent sheet bottoms or adhesive for cardboard bottoms. Bar weights are used to hold the



 Several methods of fastening side walls of transparent plastic sheeting to a bottom, either of cardboard or heavy gauge transparent sheeting, for strong seam.





R-70 PLASTIC EDGER



RECTANGULAR SIDING



SPECIAL SHAPES



LARGE CYLINDERS



FEATURES

- A MODERN PRECISION TOOL BACKED BY 22 YEARS EXPER-IENCE WITH SHEET PLASTIC
- CLEAN ECONOMICAL ELECTRIC HEAT
- BUILT-IN DIAL THERMOMETER
 ACCURATE THERMOSTATIC HEAT CONTROL

THERMODRAW

PRECISION-BUILT PLASTIC MACHINES

PRESSES FOR DRAWING SEAMLESS ROUND COVERS AND BODIES.

THERMOCURL

CYLINDER AND CAP BEADING MACHINES. BOTH HAND AND AUTOMATIC TYPES.

THERMOFOLD

FOLDING MACHINES FOR LINE FOLDING AND CREASING.
ALSO COMPLETE MANUFACTURING INSTALLATIONS



R - 70 DUPLEX TWO BEADS FORMED SIMULTANEOUSLY

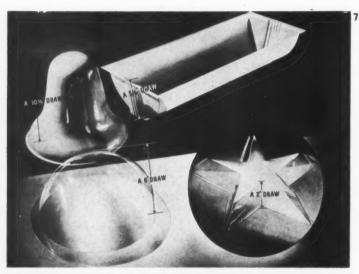
GROOVE FOR CARDBOARD

Taber INSTRUMENT CO.
NORTH TONAWANDA, NEW YORK

R-70 EDGER **BULLETIN 4201**

bead firmly on the bottom until the adhesive sets.

Bottoms are sometimes formed of rabbeted discs made of plastics, boxboard or wood. In such cases, the cylinder is given an outside bead, rests on the rabbet and is cemented thereto. Another form involves a shallow plastic, cardboard or wooden cup formation. The cylinder may have an inside bead cemented into place. A fourth form utilizes a metal base seamed into place in a manner similar to that used in metal can formation. Exterior beading is formed as a part of the seaming process. Rectangular containers: Rectangular containers are made up of one or more blanks cut from sheets which are folded, assembled and cemented in the required shapes. The blanks are cut down on regular cutting presses similar to those used in paper cutting. Corners are cut with "chop out" dies in a power press. These dies are made of rigid strips of tool steel with a sharp cutting edge set in a block of wood or metal. Creasing, scoring, and folding are done on standard creasing ma-





chines usually consisting of electrically heated creasing bars operated by foot pedal against sponge rubber pads. Adjustable stops behind the creasing bar quickly locate the sheet to be creased. Where volume production is involved, adjustable creasing dies which crease and score four sides at once are used on power presses. In cementing the seams of rectangular containers, the method used is similar in principle to that used on cylindrical tubes except that rectangular blanks are used in place of round mandrels. Adjustable cementing forms—sometimes heated—have been developed by several manufacturers.

Other fabrication methods: Seams on transparent

Other fabrication methods: Seams on transparent containers are sometimes secured by sewing, stitching, and eyeletting. These methods, however, do not provide a sift-proof seam, although they may provide ample sturdiness where the product requires neither airtightness nor freedom from sifting.

Metal edging, similar to that used on paper carton blanks, is sometimes used as a stay material in erecting rectangular containers. For decorative purposes and to secure additional strength and rigidity, metal wire or decorative cord is sometimes rolled into a bead during the bead-forming operation. Sometimes the bead is first printed before rolling. Transparent sheet materials are increasingly being decorated by printing and by roll leaf stamping with metallic foils.

Drawn rigid plastic containers

A comparatively new commercial method for producing rigid packages from sheet stock of cellulose acetate, ethylcellulose and vinyl resins is deep drawing, swedging, or thermoplastic sheet molding. This method consists basically in transforming a more-or-less twodimensional sheet into a three-dimensional form by means of dies in a drawing press, under the application of heat and pressure. The term drawing is differentiated from embossing by restriction to the process in which sufficient material flow takes place so that the wall thickness of the finished piece is the same as that of the original sheet stock. Embossing, on the other hand, assumes that a certain amount of stretching takes place with consequent reduction in wall thickness. Some manufacturers combine both processes-drawing for strength and embossing for unusual effects.

More and more drawn types of rigid plastic containers (Please turn to page 160)

7. Fine deep drawing qualities of transparent sheeting used for safe, light-weight shields for lighting fixtures. Note wrinkle-free angles on the hemisphere and the fidelity of form of the star. Photo Celanese Celluloid Corp. 8. Further examples of deep-drawn lighting fixtures and display signs. Diversity of items shows the inherent possibilities of drawn rigid plastic sheeting for package containers and display units. Photos General Plastics Corp-



Is Your Product ASLEEP ON THE SHELF?



A Transparent Package by Ritchie Will GET IT DISPLAYED WHERE THE SALES ARE MADE!

HAVE YOU noticed how many products in Transparent Packages are on display in almost every store today?

There are good reasons. Retailers know that Transparent Packages create "impulse" sales. They know that Transparent Packages invite inspection and handling (without danger of soilage). They know that a properly designed Transparent Package gives new freshness and sales vitality to otherwise familiar products.

Why not look into the display and sales advantages of a Transparent Package for *your* product? Don't believe, before you investigate, that your product is unsuitable or that the cost is too high. For Transparent Packaging is a versatile medium that costs less than most people think.

Ritchie is designing and manufacturing Transparent Packages for such diverse merchandise as cosmetics, shoes, men's furnishings, medicines, sporting goods — in almost every field where display plays a part in modern merchandising. We'll be glad to show you what we are doing for others and what we can do for you. No obligation — write today.



SET-UP PAPER BOXES FIBRE CANS TRANSPARENT PACKAGES

8861 BALTIMORE AVENUE . CHICAGO

NEW YORK

DETROIT

LOS ANGELES

ST. LOUIS

MINNEAPOLIS

DENVER

MAM

PACKAGING CATALOG

157



Cosh Register's Next Door Neighbor—These packages help place the Flavour Candy Company's penny sweets where they catch customer's change. By Show Box Division, Central States Paper and Bag Company, St. Louis.



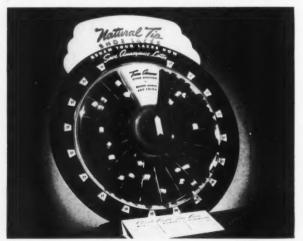
Easy to Use... Easy to Soll—Here's an excellent example of extra value added to a product by a clever dispenser package of rigid, transparent Vuepak. Fabricated by Ira L. Henry, Watertown, Wisconsin, for Thread Mills, Inc.



Showmanship Mass Produced—This illuminated, translucent display was printed on Vuepak in seven colors, then drawn into shape on a hydraulic press by W. P. York, Inc., Aurora, Illinois, for Muehlebach's Pilsener Beer.



Sells Wholesale Lots—at retail prices. This sleekly packaged cosmetic combination sells three units at the pace of one for Kathleen Mary Quinlan, Inc. Wallace Paper Box Company, New York, were co-designers and fabricators.



Silent Sales Clerk—Just turn the dome until the open slot is over the size and style shoelace you want, and help yourself! Entire unit fabricated of Vuepak by Design Center, New York, for Hutmacher Braiding Company.

to more profits-Show it in Vuepak

In the new selling technique, packaging your product and displaying it become one step—show it in a container of rigid, transparent Vuepak!

With its almost perfect transparency, Vuepak lets your product be seen as soon as the package is seen, helps your product sell itself without a word from busy retail clerks, almost invariably wins your product preferred display position.

Yet sturdy and rigid, Vuepak also protects your product from handling, keeps it fresh, clean and salable, lets it be seen without being hurt.

Vuepak is now successfully packaging and selling products as large as blankets and as small as one-dram bottles of perfume. Recent improvements in package-making equipment have put containers and displays of Vuepak within the price limits of almost every type of merchandise.

For full details and the names of competent fabricators, inquire: MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield, Mass. District Offices: New York, Chicago, Detroit, St. Louis, Birmingham, San Francisco, Los Angeles, Montreal.

MONSANTO PLASTICS

SERVING INDUSTRY... WHICH SERVES MANKIND

19 VUEPAK Questions and the Answers

- 1. What is VUEPAK? VUEPAK is a rigid, transparent plastic packaging material tough, resilient, beautiful. It is made of cellulose acetate.
- 2. Who makes it? Plastics Division, Monsanto Chemical Company, is the sole manufacturer of the VUEPAK transparent packaging material.
- 3. Who makes VUEPAK packages? There are qualified VUEPAK fabricators in every part of the country. Write for their names and addresses.
- **4.** How thick is VUEPAK? Standard guages are .003", .005", .0075", .010", .0125", .015", .020". Thicker sheets available on order.
- 5. What sizes are available? VUE-PAK is available in sheet sizes up to 30° wide in any length, and in continuous rolls 30° wide and 500 ft. to 1,000 ft. long, dependent on gauge.
- 6. Is it absolutely transparent? With a light transmission factor of better than 95% VUEPAK is the most transparent material available for packaging use.
- 7. Can VUEPAK be obtained in color?
 The trade name VUEPAK is normally applied only to clear transparent material. Colored cellulose acetate sheets, opaque or translucent, can be obtained in identical gauges in sheets up to a maximum size of 20° x 50°.
- 8. Does it warp in use? Not if the packages and displays employing it are properly designed and constructed.
- 9. Does the surface show scratches?
 Not unless abused.

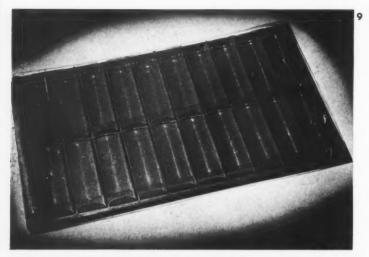
- 10. Is it affected by sunlight? No.
- 11. Is it affected by heat? Not at ordinary temperatures. It begins to soften at about 180° F.
- 12. Has it any odor? VUEPAK is practically odorless and tasteless and is widely used for candies and foods.
- 13. Will VUEPAK burn? VUEPAK is what the Underwriters' Laboratories class as "slow burning." Rate of combustion is slower than newsprint.
- 14. How can it be fabricated? It can be drawn, shaped, formed or folded into almost any shape, by means of inexpensive dies, combined with paper, cardboards, other plastics, wood, glass, metals, etc.
- 15. Can a VUEPAK container be airtight? VUEPAK containers with seamed-on metal bottoms and tops, equipped with friction plug lids, can be practically airtight.
- 16. Can it be printed on or embossed? Yes, almost anything done with paper can be done with VUEPAK.
- 17. Can it be stapled or cemented?
 Yes.
- 18. What about price? Recentimprovements in package making equipment have made containers and displays of VUEPAK available within the price limits of almost every type of merchandise.
- 19. Where can I get additional specific information? Consult your fabricator or Plastics Division, Monsanto Chemical Company, Springfield, Massachusetts.



Show-All Puckage—Texture, weave, color—all are instantly revealed in these slim cylinders of Vuepak for Roll-ee girdles. Svelte model is printed in black on container. By National Transparent Box Co., Springfield, Mass.



Double Selling Punch—When the ginger is gone, the label slips off and this attractive cannister serves as a handsome, sturdy cigarette box. Fabricated by George V. Clark Company, Long Island City, New York, for Maron's, Inc.





9. A counter display case for radio tubes fabricated of ethylcellulose sheeting. 10. Counter display unit for watches has a molded base and a transparent hood of drawn ethylcellulose sheeting. Full protection against pilferage is afforded the watches together with complete visibility for the shopper. Fabricated by General Plastics Corp. from material by Dow Chemical Co.

and displays are being used. They are sturdier, more sift-proof and more adaptable to the product contained. Prospective users should keep in mind, however, the relatively higher initial cost and should not try to use these drawn types unless their quantities are large, and no sudden change in design or shape is required.*

It takes some weeks to make special drawing dies, depending upon their intricacy, and some consideration should be given to possible delays due to priority control. The prospective user should also consider the

*One manufacturer claims that individual designs can be produced for short runs economically. It is possible to run as low as one thousand pieces or as miny as one h.ndred thousand without a staggering set-up charge. The size of the item holds no problem for this manufscturer, for it is claimed that items can be molded 3 ft. by 5 ft. or 3 in. by 5 in. with the same ease.

manufacturing facilities of his prospective supplier.

Seamless drawn, transparent packages have received concentrated attention of designers and technicians since the advent of these materials. Cellulose acetate, ethylcellulose and vinyl sheeting are proving their true value in the packaging field. Having good dimensional stability, moisture resistance and other elements, they open a field of wide use.

Deep drawing can be used in numerous ways. For large items where strength is necessary, it lends itself to great advantage. It is possible to design and mold contours, ribs or corrugations similar to metal stampings to get strength and rigidity. The slow curve or the small radius in corners does much to build, solid, strong displays and packages. Embossed designs for added beauty can be produced. For the individual display where appearance and finish are of paramount importance, materials of color can be utilized. One manufacturer has a special process which allows printing before drawing. He claims that the ink becomes integral with the finished display under the heat of drawing.

The clear dome for displays has its advantage in that it prevents pilferage and enhances the appearance of the merchandise. Domes of rigid plastic sheeting are not broken readily and prevent dust from damaging the merchandise. Seamless displays and packages have a modern, sleek appearance which adds to merchandise and individualizes the product.

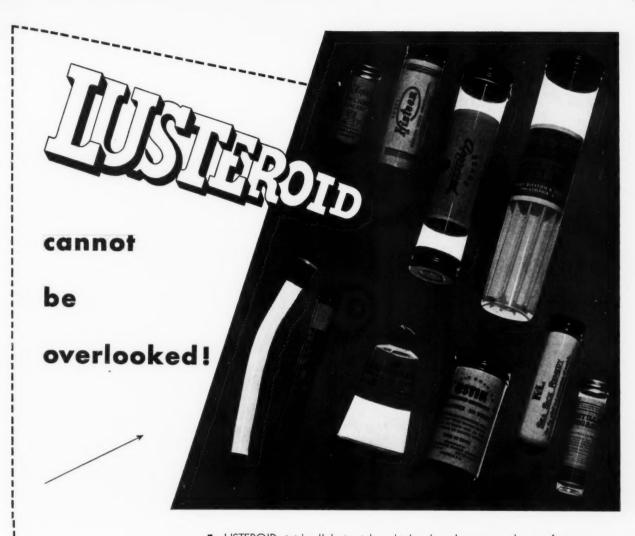
The designer of drawn pieces is limited only by imagination. Ovals, circles, hemispheres or oblongs with rounded corners are all feasible. There are designs of ornate type which can be reproduced countless times.

The embossing of trade-marks and names appeals to quality buyers. For the display artist the process opens a field so wide that only the solid molding art can equal it. Miniature showcases can be developed, using covered dome windows. Plaques for advertising purposes which have depth and the third dimension are always appealing. Color, too, can be added—in fact the entire spectrum is at the designer's disposal—marble or cloth finishes, wood or pastel shades, transparent, opaque or translucent for lighting effect.

The designer and engineer can build all the strength needed by ribs, corrugations, contours, curves and angles. This method of securing strength has been developed to a fine point and it can be applied by the craftsmen to achieve the best results. The range of gauges of materials make possible a wide application to this process and, though it is young, there has been a great expansion.

In many so-called drawing operations the wrong temperature, incorrect die clearances, faulty die design, too slow or too rapid a time cycle or the use of the wrong sheet stock for a specific job produce parts which are described as "drawn" but are really a combination of drawing and embossing. It is true that a container produced by stretching the stock may require slightly less material and the production speed may even be higher. Needless to say, when a part is to some extent embossed rather than drawn, the accompanying reduction in wall thick-

(Please turn to page 165)



A Note or Phone Call Will Bring An Answer to Your Packaging Problem USTEROID rigid cellulosic vials and tubes have been proved major factors in the sales and sample packaging of drugs, cosmetics, small objects, petroleum products, tobacco and many other types of merchandise. Smart manufacturers and merchandisers look to Lusteroid for sales building in the soundest way: through more satisfactory packaging.

Lusteroid has many advantages that appeal to consumers and packagers alike: they are unbreakable. They are lightweight (their strength allows of unusually thin walls without sacrifice of safety). They are colorful. They come with multicolor labels applied integrally. They are pleasant to the touch. They come in various sizes to fit the product—and the customer's hand, pocket or purse.

The Lusteroid Container Co. has a design service to help you take full advantage of these unusual packages.

LUSTEROID CONTAINER CO., INC.

Formerly Lusteroid Division of the Sillcocks-Miller Company

10 Parker Avenue, West

SOUTH ORANGE

NEW JERSEY

"You don't need a big clue to get the evidence in *this* case!"

THE AMAZING CASE OF THE TRANSPARENT CLUE



... it was nearly midnight when the detective returned to his quarters on Plastic Street. He had been up since dawn on this cold, wind-swept day, seeking to uncover the one important clue he knew yet remained.

Kneeling beside the dying embers of the open fire, he examined the evidence. Ah! Just as he suspected—it was still very much intact—despite sub-zero weather it had not cracked or become brittle. "Amazing material," he muttered as he flexed the thin, small strip between his dexterous fingers. "Amazing!"

Already he could see why this tiny clue meant so much. Few transparent materials possessed these remarkable properties. Now he realized more than ever before why this unique material was in such great demand. In another instant he had deduced a striking fact: Surely orders must be tremendous, and it must be expected that production

could not keep pace with demand in these abnormal times. Thus he must use only a portion of it for samples and experimenting. There must be no waste.

With a sudden movement he turned to his work table. Placing the transparent clue before him, he continued the careful examination—prodding, folding, testing. Then, in a fine, easily-read hand, he penned his notes for future reference:

"Jan. 1, 1942—Discovered small strip of remarkable material, clear as crystal and strong as iron—indicates many uses heretofore unexplored. It does not crack even in sub-zero weather. Was pleased to note that it was not affected by my warm storage room. Indeed, this was the clue to the ideal packaging material! Amazing—simply amazing!"

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN NEW YORK • ST. LOUIS • CHICAGO • SAN FRANCISCO • LOS ANGELES • SEATTLE • HOUSTON

TABLE I. DRAWN CONTAINERS

Size Containers			1/2 In. Cap.					
D. I D. I I		Material		Sg. Blank	Material		Sg. Blank	Total Area Sg. In.
Dia., In.	Depth., In.	Type	Thick., In.	Area/Sq. In.	Type	Thick., In.	Area/Sq. In.	
3	1	Regular	0.005 0.0075 0.010 0.015 0.020	(4 ³ / ₄ x 4 ³ / ₄) 22.5	Rigid	0.010	(4 x 4) 16	38.5
3	13/4	Regular	0.005 0.0075 0.010 0.015 0.020	(5 ¹ / ₂ x 5 ¹ / ₂) 30	Rigid	0.010	(4 x 4) 16	. 46

TABLE II. SET-UP CONTAINERS

S	Size Side Wall		$^1/_2$ In. Cap.		3/8 In. Bottom			Total Ārea			
	-	Mat	erial		Ma	terial	Sg. Blank	Mat	erial	Sg. Blank	Side Wall +
Dia., In.	Depth, In.	Type	Thick., In.	Area/Sq. In.	Type	Thick., In.	Area/Sq. In.	Туре	Thick In.	Ārea/Sq. In.	Cap. + Bot- tom, Sq. In.
3	1	Regular	0.005 0.0075 0.010 0.015 0.020	(1 x 9 ¹¹ / ₁₆) 9 ³ / ₄	Rigid	0.010	(4 x 4) 16	Rigid	0.010	(3 ⁷ / ₈ x 3 ⁷ / ₈) 15	403/4
3	13/4	Regular	0.005 0.0075 0.010 0.015 0.020	(1 ³ / ₄ x 9 ¹¹ / ₁₆) 17	Rigid	0.010	(4 x 4) 16	Rigid	0.010	(3 ⁷ / ₈ x 3 ⁷ / ₈)	48

ness produces a less rigid part. "Stretching" the material will set up internal strains which weaken the sheeting considerably and may cause brittleness. This may contribute to the collapse of the containers or inadequate protection to the merchandise contained therein. Containers which are "drawn" in the true sense of the word retain the full strength, thickness and surface finish of the original material. Drawn containers require, if anything, slightly less material than set-up containers of the same size. This difference is so slight that for practical consideration the material costs in each case are usually quite comparable. Table I shows the amount of stock used for both 1-in. and 13/4-in. deep containers of 3 in. diameter. Tables II and III show the amount of stock used for "drawn" and "set-up" containers of the same size as well as the relative amount of time required to produce each type. One important factor is that due to the size of the set-up containers, drawn tops and bottoms were employed which substantially reduced the fabrication time. If the diameter were increased to 7 in. or 8 in. and, due to the lack of suitable drawing equipment, it became necessary to make a top by the conventional two-piece method, the time required to produce the set-up container would probably be three times that required for the drawn containers of the same size instead of 1.6 and 1.5 as shown in the Table III.

From the above it will be seen that while drawn containers require about the same amount of material as set-

up containers of the same size, a substantial reduction in manufacturing cost results from the increased production speed of the drawn type of container. Drawn containers also have a much more pleasing appearance and due to the elimination of all seams and cemented joints, there is less likelihood of the container failing in actual use.

The question of the maximum depth for a single draw is frequently raised. It has been found that under normal production conditions, the deepest draw to make economically is about (2:3), that is to say, a cup 3 in. in diameter can be drawn to about 2 in. depth. Acceptable drawn parts have been produced 3 in. in diameter and $2^{1}/_{2}$ in. deep. In this extreme depth of draw, however, all conditions have to be nearly perfect, with the result that it is not recommended under average operating conditions. With multiple draws much greater depth can,

TABLE III. COMPARATIVE FABRICATION TIME

Set-Up C	ontainers	Drawn Containers	Relative Area	Relative Time*	
Size, In.	Sg. In. Mat.	Sq. In. Mat.	Set-Up/ Drawn	Set-Up/ Drawn	
3 x 1 3 x 1 ³ / ₄	40 ³ / ₄ 48	38 ¹ / ₂ 46	1.06 1.04	1.6 1.5	

^{*}The drawing process sometimes makes use of multiple molds, in which case, the relative time is in favor of the drawing process, since it actually takes no more time to draw 20 boxes than to draw one.

of course, be obtained with entirely satisfactory results.

Design of drawing dies seems to be limited only by the ability of metal and wood forming machinery and the ingenuity of man's mind. Wood, vulcanized fibre, laminated phenolics, rubber, brass, cast iron, and steel are all used in die construction. Most dies, however, may be grouped under two general classifications: (1) positive pressure type, and (2) spring loaded, all of which are produced from iron, steel or brass in various combinations.

Generally speaking, it can be said there are two methods of handling the plastic sheet in forming of parts for containers: first, the use of heated tool parts to soften and form the blank; second, the pre-heating in whole or part of blank and forming of it in un-heated tools.

The first method is the faster and produces a more accurate size of finished article, i.e., duplicate formings will be of the same size, providing, of course, that the tools are properly controlled as to temperature. This means that the relative temperature of the forming

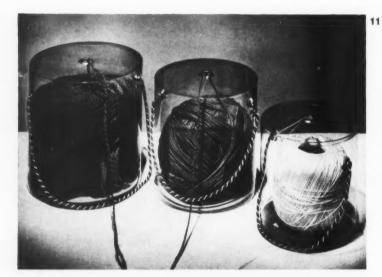
punch, the die plate, and the blank holder must be held at a constant. Temperatures of each will vary widely, depending on the form and size of the object, weight of material, nature of the material, and speed of production.

Each producer's sheet has a critical temperature somewhat different from the competing sheets. Assuming, for example, that the particular maker's sheet is being used in two entirely different die-formed shapes and that the critical temperature of the particular sheet is 165 deg. F., to show the variation of the heat control of the tools parts, the following constants necessary to maintain in each unit of the forming die, for the two widely different formings are as follows:

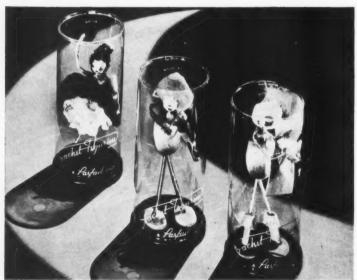
(Please turn to page 170)

Forming No. 1

Punch temperature	90 deg. F.
Die block temperature	165 deg. F.
Blank holder temperature	165 deg. F.



11. Lap-seam cylinders fitted with shallow drawn tops make interesting yarn dispensers. They have bottoms sealed to an inside bead. Side walls and top are fitted with metal grommets which re-enforce holes for dispensing the yarn and for the cord handles. These containers represent one of the typical constructions for cylindrical boxes made of rigid plastic sheeting. Photo P. P. Kellogg & Co. Division, U. S. Envelope Co.



12. Cemented cylinders of acetate plastic sheeting for displaying sachet figurines. Side walls are beaded inside at top and bottom and the covers, with die-cut hole, are cemented to the top bead. The bases, formed of black enameled sheet metal, fit inside the cylinders and are held securely by the friction of the lower bead. Silver printing on the side walls and covers is directly applied to the sheet, making permanent label. Height of container, 6 in., diameter, 2 1/8 in. Photo Eastman Kodak Co.

166 PACKAGING CATALOG

Giant Perfume Bottle 27" bigh, 13" diameter.

eld deof

for ed he to ts, iit



Light Globe



Powder Puff Box



Walco Innounces

AN ENTIRELY NEW PROCESS FOR MOLDING

plastic packages and displays

WHOLE NEW FIELD of packaging utility and product dramatization is opened by this revolutionary WALCO development. Employing newly discovered principles, the WALCO process molds thermoplastic sheets in a variety of compound curves and angles that fill countless packaging and display requirements.

Materials which can be molded by the WALCO process include acetate, methacrylate, ethyl cellulose and vinyl resin sheets which are available in a diversity of transparent, translucent and opaque colors.

Printing and decoration may be incorpora-

ted in package and display design. Seamless articles are molded from sheets varying in thickness from .005" to .5". The size of any article is limited only by the area of these sheets, currently 40" x 60".

Drawn rigid plastic containers and displays made by the WALCO process, offer definite advantages from the standpoint of color and design. Large and small quantities at reasonable cost

Our experienced technicians are at your service to assist in package design and improvement, or better product dramatization.

WALCO PLASTICS

356 GLENWOOD AVENUE • EAST ORANGE, N. J.







LET YOUR MERCHANDIS

ROUND

SQUARE

XUM

mile at the customer

Look about you ... at cosmetics, candy, toothbrushes, beans ... the Eyes have it! Smiling LOOK about you ... at cosmetics, canay, toombrosnes, beans ... the Eyes nave its Smiling through clear transparent containers, American merchandise has acquired new sales appeal. ugn clear transparent containers, American merchanaise has acquired new sales appeal. Competition is keen. Gone are the days when a mere "transparent wrap" is news.

The packaging problem has become complex. Square, round, and irregular packages, the packaging problem has become complex. Square, round, and irregular packages, bags, and envelopes, fully transparent and in combination with cardboard, metal, or molded plastics, are now tailored to the merchandise. The package has been trained to sell as

as aispiay. U. S. E. designers offer View Pac Containers, Bags, and Envelopes in a complete service



DIS





14

13. A counter display dispenser for penny mints—one of the less expensive types having base and back of cardboard. A metal edge top makes a sturdy frame. Photo Central States Paper & Bag Co. 14. Counter canister of cellulose acetate sheeting with metal enameled cover for ice cream cones. Advertising message in multicolor is printed directly on the sheet.

Fabricated by Weinman Bros. from material by Celanese Celluloid Corp.

Forming No. 2

Punch temperature	132-35 deg. F.
Die block temperature	145-48 deg. F.
Blank holder temperature	16s deg. F.

In addition to accurate control of tool part temperatures, the fabricator must operate his tools in a mechanism that will permit quick control of speeds and pressure. The pressure on the blank holder must be absolutely controlled and quickly varied to whatever constant is needed in the particular draw. This covers a very wide range between the different producers' sheets. In the second or pre-heated sheet very accurate control and technique are necessary if the formings are to be alike or fairly so in a run of any quantity. The prime necessity is that perfect even heating of the blank be obtained, also, speed in forming and even extraction of the residue heat from the formed object.

Ordinarily this type of forming results in what is called a "stretch draw;" little if any of the material moves out from between the blank holder and die block. For some types of one-piece formings desirable speed and results can be obtained. Very often a combination of these two methods is used. Some manufacturers avail themselves of "infra-red" beam heating for prevention of loss of heat in forming.

The design and construction of the tool structures

needed for forming one-piece drawn units must be backed by a very complete knowledge of the varied characteristics of the plastic sheets available to the fabricator. A tool that will be entirely successful for one maker's sheet may not produce on another's. For example, sheets from two well-known producers may be drawn in the same tool at the same time but, when finished, one forming will drop loosely into the other.

Each tool is an engineering problem in itself. Of course, standard shapes, such as covers or shallow flanged units do not mean any change from set tool design and present no particular problem, except that they must be adjusted to the character of the sheet being used.

Rigid plastic displays

Within reasonable limits, rigid plastic displays and fixtures can be built to meet any reasonable budget. In the least expensive versions, bases and supporting structures of chipboard and cardboard may be used. In mass production displays, cardboard and metal are commonly selected for frames, bases, and supporting structures. From this point, investment in displays can go upward, including assemblies of wood and molded or cast plastic with or without the addition of electric illumination. Maximum economy is also obtained in displays using established fabricating techniques and equipment.

Take a tip from the GOSDFISH



The goldfish owes his fame largely to his lack of privacy. When products are exposed as effectively—a long step is taken toward a more rapid turnover. Do as the leaders in many fields are doing—use *Eastman Acetate Sheet* to make your package or display container an attractive miniature showcase.

Eastman Acetate Sheet keeps the product safe until sold; it can't become shopworn—so it gets on-the-counter display.

Eastman Acetate Sheet imparts added life and luster to the product... "spotlights" its good points... and "glamorizes" it so effectively that

customers are more surely coaxed up to it, for the close-ups that close sales.

Eastman Acetate Sheet is tough, durable... comes in three types...takes printing beautifully... is remarkably adaptable (see next page).

Let us send you samples of Eastman Acetate Sheet to try for your current packages and displays, or to keep on file "just in case." Specify type, thickness, and dimensions desired. Or, if you prefer, we will send you the names of fabricators near you. Eastman Kodak Company, Chemical Sales Division, Rochester, N. Y.

TURN THE PAGE FOR EXAMPLES OF APPLICATIONS

EASTMAN ACETATE SHEET

ATTRACTS . PROTECTS . SELLS

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TURN THE PAGE FOR EXAMPLES OF APPLICATIONS

EASTMAN ACETATE SHEET

ATTRACTS . PROTECTS . SELLS

DEMONSTRATING THE ADAPTABILITY OF EASTMAN ACETATE SHEET



(1) IN COMBINATION WITH MOLDED PLASTIC



(2) IN COMBINATION WITH METAL



(3) IN COMBINATION WITH WOOD



(4) USED BY ITSELF FOR ALL-TRANSPARENT PACKAGE



(5) IN COMBINATION WITH PAPER

The Clear Transparent type of Eastman Acetate Sheet forms rigid all-transparent containers—or combines with plastics, metals, wood, paper, paperboard, or other materials, to show as much of the product as desired.

The Matte Translucent and the Colored Translucent types of *Eastman Acetate Sheet*, used alone, with each other, or in combination with the Clear Transparent type, offer interesting, valuable, and as yet only slightly explored possibilities for unusual packages and displays.

Credits for Packages Shown Above

- PRODUCT—Tri-pak Gun Kit, Inc., San Francisco, Calif. LABEL — Dobeckmun Company, Oakland, Calif. MOLDING — Remler Co., Ltd., San Francisco, Calif.
- (2) PRODUCT—Eastern Tablet Company, Albany, N. Y. PACKAGE—Parfait Powder Puff Co., Inc., Chicago, III.
- (3) PRODUCT—Bausch & Lomb Optical Co., Rochester, N. Y. DISPLAY—Regent Specialties, Inc., Rochester, N. Y.
- (4) PRODUCT—Modern Plastic Company, Los Angeles, Calif. PACKAGE—Modern Plastic Company, Los Angeles, Calif.
- (5) PRODUCT—Cortland Line Co., Inc., Cortland, N. Y. PACKAGE—Flower City Specialty Co., Rochester, N. Y.

Specifications and Fabrication Data

Eastman Acetate Sheet is available in rolls up to 40" in width and any convenient length, and in stock- and cut-to-size sheets. Clear Transparent type is furnished in thicknesses up to .020"; Matte Translucent type (matte surface one side) in thicknesses .003" to .010"; Colored Translucent type (pigment coated one side) in thicknesses .003" and .005"—in a wide range of light-fast pastel shades. All three types of Eastman Acetate Sheet can be scored, folded, pleated, fluted, molded, drawn . . . take printing inks without wrinkling . . . can be sewed, crimped, stapled . . . cement with an unyielding bond . . . do not crack or shatter.

Free Laboratory Facilities

At Kodak Park in Rochester, N. Y., there has recently been established the Eastman Transparent Packaging Laboratory. Here, experts demonstrate efficient methods of making containers from Eastman Acetate Sheet . . . help solve actual production problems; visitors can fabricate the acetate sheeting. A letter will bring detailed information promptly . . . there is no cost or obligation.

Branch Offices: New York, Eastman Kodak Company, 350 Hudson Street; Chicago, Eastman Kodak Company, 1727 Indiana Avenue. Pacific Coast Distributor: Wilson & Geo. Meyer & Co.—San Francisco, Federal Reserve Bank Building; Los Angeles, 2461 Hunter Street; Seattle, 1020 So. 4th Avenue. Canadian Distributor: Paper Sales Limited —Toronto, 11 King Street West; Montreal, Sun Life Building.

EASTMAN KODAK COMPANY, Chemical Sales Division, Rochester, N. Y.

SEE PRECEDING PAGE AND SAMPLE OF EASTMAN ACETATE SHEET

EASTMAN ACETATE SHEET

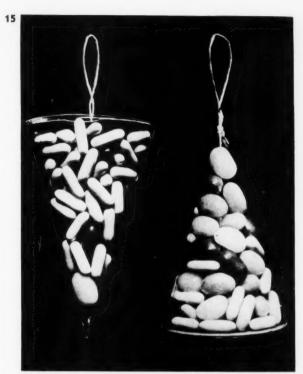
ATTRACTS . PROTECTS . SELLS

Improvement in manufacturing technique has added greatly to the versatility of rigid plastic sheeting for merchandise displays. They may be made by both the set-up and drawn methods which are used to manufacture rigid transparent containers. Originally, most of these displays were also containers. The transparency and rigidity of the plastic made it extremely difficult to make an exact division between the two classes of use. In 1941, fabricated transparent plastic display units entered a much broader field of use in which there are three basic classifications as follows:

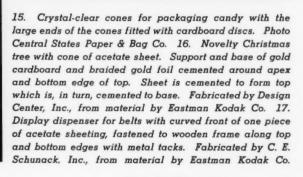
Dispenser displays: Combining the function of a merchandise container and the display piece, these units have had their widest use in the confectionery field. In many cases, they are merely adaptations of proved merchandise packages with the construction adequately strengthened to permit their functioning as displays and with the addition of accessory attention-getting devices, such as cardboard pop-up backs or contrasting trim.

Used for candies and gum and other confections, ranging in retail price from one cent to 10 cents, the display packages are designed to merit a prominent spot on the retail counter, preferably near the cash register where they can stimulate impulse sales. Products other than candies which have successfully used this type include automobile fuses, golf balls, and packaged aspirin.

Units of this type normally are shipped in a corrugated carton with the additional protection of a chipboard sleeve which, in some cases, carries the instructions for assembly and set-up of the display in the proper manner. **Product displays:** More pretentious in nature, rigid transparent and translucent displays in this classification are widely used for merchandise for which point-of-sale display is desirable, but where protection for the product from soiling or pilferage is also needed. The cosmetics and perfume industry has made effective use of this class of display for counter units, which in some cases show



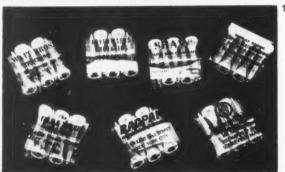






PACKAGING CATALOG





8 the entire line of a company's products with good effect.

In many instances, these display cases follow established construction principles previously used for display cases having glass fronts. In this function, the rigid transparent plastic has replaced glass. Its advantages are lowered breakage in shipping and greatly decreased weight, while still retaining full protection and visibility. The adaptability of the plastic to surfaces with compound curvatures has broadened the design scope of permanent displays of this class. Some display cases have had concave curved fronts which have proved very successful in killing objectionable highlights and reflections found in flat glass installations.

A very recent trend, made possible by the improvement of techniques for drawing and forming rigid transparent plastic, has been in displays using metal or wood bases and convex domed transparent surfaces. Displays of this type, basically similar in character, have been used for products as diverse as wrist-watches and vitamin pills. Electrical illumination has been successfully incorporated into many of these rigid plastic sheeting display units.

18. A cellulose acetate sheet cylinder with cardboard base and removable lid protects a doll and woolly lamb from dust not only on the store shelves but also in the home. Photo Hercules Powder Co. 19. Acetate sheet containers, filled with plastic golf tees, make effective advertising pieces when printed with firm name and address. Fabricated by Shaw Paper Box Co. from sheeting by Monsanto Chemical Co., Plastics Div. 20. Typical pretzel, nut, and candy packages which make use of the moisture resistance and protective strength of clear vinyl plastic sheeting.



PACKAGING CATALOG

METEX

SOLUTION TO METAL SHORTAGE

METEX—amazing new thermoplastic with the bright metallic sheen. METEX—pleasantly warm to the touch, yet with appearance of bright expensive metal. METEX—can be formed, embossed, die-cut, beaded, braided and printed. METEX—ideally suited for light reflectors and lamp shades; jewelry, handbags and other accessories; packages and displays, and innumerable other applications. METEX—IMMEDIATELY AVAILABLE in sheets or rolls—GOLD, SILVER AND COLORED METALLIC FINISHES—20" wide in thicknesses from .005 to .030 PLAIN OR EMBOSSED in many strikingly beautiful designs.

CELATE

COLORED CELLULOSE ACETATE

IN SHEETS OR ROLLS—PLAIN OR EMBOSSED. Transparent, translucent and opaque in stock colors and made to match your colors. Rolls save up to 30% in automatic production and printing. Available up to 33" wide, from .003 to .015.

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EXCLUSIVE SALES REPRESENTATIVES

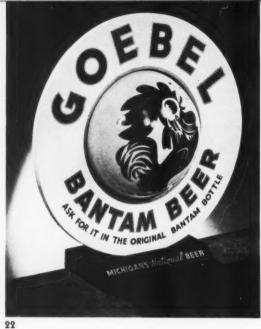
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PACKAGING CATALOG

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21 and 22. Rigid plastic sheeting for these three-dimensional displays is first printed flat. The sheeting is then drawn to the desired shape, giving the third dimensional effect to printed surface. Ink is such that it is chemically bonded with the plastic. Photo Monsanto Chemical Co., Plastics Division.

Color plates on opposite page W. C. Ritchie & Co.

Textile products, where soilage of the merchandise on display is a major consideration, have also very successfully used rigid transparent display housings. Towels, lingerie, men's shirts, gloves, and similar products are typical examples of successful use of rigid transparent plastic counter displays. In most instances, brand name and sales copy are printed on the transparent surface.

Attention displays: Displays and devices in this category use rigid plastic sheeting as a means to gain attention for a product or the display of a trade name and pictorial treatment of the product. The distilling field has been especially alert to this trend, with a number of new displays introduced during 1941 for beverages. Notable is a process developed for printing up to seven

colors on rigid sheet plastic, which can then be drawn or formed to such shapes as relief bottles, globes or trademark insignia. Most displays using this technique also incorporate electric illumination. These plastic displays are extremely light in weight and, against comparable types using metals and glass, relatively inexpensive. Rigid sheet plastics are also finding many uses in the field of display properties. An especially popular item is imitation giant ice cubes for displays of summer merchandise and for winter scenes. Simulated icicles have also been drawn and formed from plastic sheets. The use of ribbons, bows, and banners of transparent acetate sheet as window display properties, in many cases with the advertising message silk-screened or lettered on the transparent plastic, has also made very rapid strides.



23. Oval transparent hoods with beaded rims fit into a cardboard tray to make these product display boxes for cosmetics. The base is covered with pyroxylin coated paper in white and gold squares and finished with a broad band of gold paper. Photo F. N. Burt Co., Ltd.



Cellulose derivative containers

by Herman B. Lermer

ELLULOSE derivative containers are made from cellulose nitrate and acetate on standard production machines. They are formed or drawn by a special process which produces a seamless shell in varied shapes and sizes. Mechanical control of the thickness of side walls and length of containers provides specifications suitable for products ranging from cosmetics to hardware or sporting goods.

While the greatest demand exists for the cylindrical vials, cellulose derivative containers are also made in square, pentagonal, hexagonal and octagonal shapes. Capsules, small and large vials, short, stubby jars, or taller ones, ampoules, tubes and dispensing containers are all available.

These containers offer a wide choice of color, either opaque or transparent, for cellulose derivatives inherently "take" pigments. This is an important feature, for cellulose containers are almost always labeled when made so that the decorative effects of the lettering and design become an integral, permanent, fixed part of the package even in re-use of it.

Because of the resiliency of cellulose, these containers resist damage and breakage. Considering their durability, their extreme lightness in weight—obvious even in single units—is most noticeable in bulk packing. This affords a definite saving in shipping costs, where weight is a factor. Naturally this lightness is also important in items that are "sampled" by mail.

In the pharmaceutical and surgical field, the inert and sanitary qualities of cellulose derivatives serve as inducements to adopt them. Moreover, sterilization without danger of breakage or change of shape in the container is important.

Besides safety from breakage the resiliency of cellulose derivative containers offers another important advantage. Many products of a powdery nature can be dispensed merely by pressing the finger-tips against the walls of the tubes or cylinders, and they thus retain the attractive appearance of their original shape during and after dispensing.

Oil- or grease-base creams and lotions, certain of which are not compatible with metals, can easily be packaged in vials, tubes or jars of cellulose derivatives, when these are made by the standard seamless process.

Since cellulose derivative containers are threaded in process of manufacture, they can be fitted with any type of threaded closure. Metal "snap-on" types, friction closure, cork, or cork with wood tops have been successfully used for various products; and "capsule" tops of the same color, or one that contrasts with the vial itself, are frequently used.

While the use of cellulose derivative containers has been preponderantly for the packaging of pharmaceuticals, drug sundries, dental and surgical supplies, first-aids, cosmetics and products for feminine hygiene, the inherent features of cellulose have won many uses in merchandising as well. These have produced many ingenious applications, such as demonstration vials of oils, greases or powders, equipped with pocket-clips, for use by salesmen; measuring and dispensing containers; and novelties, such as sewing kits containing an assortment of mending threads with a thimble cap.

Cellulose derivative containers are capable of a wide variation not merely in size, but in shape and function. Color is permanent and is available in ever imaginable hue. Color engravings Courtesy Celluplastic Corp.





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Boxmaking and decorative papers

DOXMAKING papers include a wide group of uncoated, coated, metallic, foil, and other types of papers designed for use primarily as box coverings, although also used for other packaging purposes on occasion. While many of these papers originated from types developed as wall papers, the boxmaking paper industry has borrowed the best in the technique and tradition of many fields and has contributed many unique developments of its own as well. Thus, today, box papers stand in a class by themselves and the industry that makes them represents a very specialized branch of the paper-making and processing field, with a tradition, skill, and technique of its own.

In the detailed descriptions and definitions that follow, the reader will find the answers to some of the specific questions that may arise regarding papers of these types. In general, it may be said that fancy papers provide a means whereby the boxmaker, the packager and the package designer may secure unusually varied effects in box decoration, at a relatively low cost.

Specifications

It is most important for the purchaser of box-cover paper to make careful specifications. He should state:

- Weight of box: i.e., light, to be discarded; or durable, probably to be preserved.
- 2) Weight of paper.3) Kind of body-stock.
- 4) Type of coating: i.e., water-proof, semi-water-proof, or permeable.
- 5) Width of roll.6) Fastness to light.
- 7) Special protective qualities: i.e., rub-proof, scuff-
- proof, etc.

 8) Type of decoration: i.e., printing, embossing, etc.
- Manner of fabricating: i.e., type of machine or manual.

Definitions

The following definitions apply to the various types and kinds of glazed and fancy papers:

Uncoated box papers: The kind of paper, such as rag, sulphite, kraft, or groundwood, which is to be coated, embossed, etc. This may be antique, natural finish, or super-calendered.

Coated box papers: Prepared by several processes, as follows:

MATT COATED: A case in or clay coated paper made on a brush coater or roll coater, or some type of brushless coating machine.

Brush Finished: A coated paper whose surface is polished by brushes.

PLATE: A coated paper, finished smooth by cold rolls through pressure in a stack calendering machine. For a

very high finish this paper is sometimes subjected to steam before being calendered.

FRICTION GLAZED: A coated paper whose surface is polished by heated rolls in a friction calender, friction being produced by the faster rotary action of the steel polishing roll against the slower cotton roll.

MICA: Paper whose coating material consists of ground mica crystals which give it a sparkling, finished appearance.

FLINT: A coated paper whose surface is highly polished by being rubbed across the sheet with flint stones. This process is slow but effective.

WATER-PROOF: A paper coated and then top-surfaced with water-proof material, such as casein or gums; or coated once with heavily sized color; or mixed with water-proofing gums.

WATER-PROOF LACQUERS: Coated papers using pigmented pyroxylin lacquers, which produce an unmottled surface with antique or high-gloss finish.

FLOCK: Paper coated with varnish on the surface of which is shaken or blown finely powdered cotton, wool, rayon or silk; commonly known as *Velours*.

Metallics

Real and simulated metallic effects on all coated papers produced as follows:

Gold, platinum, tints: Produced by grinding bronze (gold), aluminum (silver) and copper, with casein and other gums or with pyroxylin lacquer; paper generally stack calendered to produce smooth and brilliant appearance.

Silver glazed (silver coated): Paper coated with "argentine," a precipitate of tin, which is first dull gray in color, but is polished to a silver finish by a friction calender. "Argentine" finish is now also available in gold and colors, both plain and embossed.

Pyroxylin coated: with lacquers in bright, dull, and pearly effects.

Half fine metallics: Produced by laying patches of a thin copper or aluminum alloy about five inches square on paper that has been coated with an adhesive. The patches are allowed to overlap in order to form a continuous metallic surface and the overlapping edges are brushed to remove any surplus.

Foils: Produced by applying to paper a continuous sheet of metallic foil, usually tin, aluminum, zinc, or their alloys. The foil is bonded to the paper by the use of adhesive (see *Decorative Foils*, page 184).

Fancy papers

Fancy box-covering papers are either embossed and tipped with colored or metallic ink, or printed in designs of one or more colors. They may be decorated

in mottled, speckled, streaked or blended effects, or in a definite design in any of several processes, such as wall paper, or other rotary-printing machines; intaglio printing; print or ink embossing; or topping.

KIDDER: Oil-ink surface printing from curved plates locked on a roller form and registering each impression as the paper runs beneath.

Wall Paper: Water-color surface printing in one or more colors from relief-pattern rollers, one for each color, registered in the running to make the complete design.

ANILINE: Stained or printed or both, with rubber rollers and relief-cut patterns—generally with alcoholgum colors.

Intaglio or Rotogravure: Papers printed from a pattern engraved on a copper roller by the photogravure process or by the use of a pattern mill. The ink, which may be water color, aniline, oil, or lacquer, is wiped off the roller by a thin blade set across it which controls the amount of ink by the angle of the blade and the depth of the engraving.

PRINT EMBOSSED: See Embossed below.

Embossed papers

By an embossed paper is understood any type having a pattern in relief, produced by any one of the following processes:

REGULAR: A steel pattern roller and a wet paper-matrix roller are mated together.

FRICTION EMBOSSED: The pattern is pressed against a smooth paper roller run without gears, which permits a slight friction as it makes contact with the pattern. Friction is produced by the use of cold and hot pattern rollers, the latter being bored and piped for steam heating. The combination of pressure and friction causes a deepening of color in the area of the pattern.

PRINT EMBOSSED: Embossing and printing in one opera-

tion by the application of ink to the embossing pattern. TOPPED AND EMBOSSED: A two-toned decoration made by applying color through a roller to the surface of the embossing.

Spanished: Color applied to the entire surface of a sheet and then scraped off with a blade, which leaves varied tones of the decorating color depending on the varied depth of the embossed surface.

Embossing designs

COMMON: Patterns in common use by many manufacturers of embossed paper. For instance: Skytogen and certain leather-grains, moire, basket weave, Persian lamb and swirl designs.

EXCLUSIVE: There are several hundred different embossing designs which have been originated or purchased by individual manufacturers who thereby own these designs exclusively. Most manufacturers have exclusive designs of their own and many such designs are protected by registration at the United States Patent Office. The Glazed and Fancy Paper Manufacturers' Association, 902 Union Trust Bldg., Providence, R. I., maintains a registration bureau of these designs for the protection of its members and to answer inquiries from customers and users.

Descriptive terms

The following descriptive terms are commonly connected with box papers, their sales value, or qualities:

FABRIC DESIGNS: Papers printed in designs that imitate various fabrics, commonly known as "fabric prints;" or embossed in imitation of fabrics, such as rep, linen, burlap, and others.

LEATHER-GRAIN: Papers with designs like grains in leather produced by embossing, ink embossing, spanishing, printing, or coating. Common examples are alligator, seal, walrus, caracul, etc.



PACKAGING THAT KEEPS

WHERE YOU WANT IT



Gleaming, attractive Pliofilm packaging has helped score resounding successes for countless packers who've adopted its moisture-airtight protection.

Whether your product is one whose flavor requires preservation of moisture content, like cheese, or one that must be kept moisture-free, like soupmix—Pliofilm provides the answer.

Its hermetic, waterproof seal safeguards taste by preventing dryness in one case, sogginess in the other. We'll be happy to give you a further demonstration of Pliofilm's many advantages with a test

wrap of your product. Write Pliofilm Sales Department, Goodyear, Akron, Ohio.



Persistent advertising in The Saturday Evening Post and Life is helping to familiarize millions

of people with this Pliofilm-Pak seal. It's a recognized stamp of quality that gives your product added appeal.



PLIOFILM



Pliofilm-T. M. The Goodyear Tire & Rubber Company

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SEALS MOISTURE



PLIOFILM SEALS MOISTURE

PACKAGING CATALOG



PORT HURON PACKAGING PAPERS



For Protection, Conversion and Display

PACKAGING

Bread Wrappers
Candy Wrappers
Yeast Wrappers
Soap Wrappers
Tobacco Packaging
Drug Dispensing
Cosmetic Packaging
Baked Goods
Protection
Razor Blade Wrappers
Toilet Tissue

Wrappers

Gum Wrappers
Transparent Carton
Wrappers
Printed Opaque
Waxed Carton
Wrappers
Frozen Food
Wrappers

LINERS

Cereal Carton Liners

GENERAL AND CONVERSION USAGE

Locker Papers
Laminating Papers
Transparent and Opaque
Bag Papers Coating
Tags and Tag Stock
File Folders
Address Tags
Pin Tickets
Butter Cartons
Wallets
Bleached Waxing
High Grade Wrapping

Tympans Gaskets Bristol Tabulating Trunk Wrap Sheet Tissues Twisting Can Stock Foil Backing Crepeing Carbonizing Specialties

INSERTS, INSTRUCTIONS, GENERAL

HURONETTE — a NEW bleached-white, platefinish stock for printed or lithographed pieces.

AMBERETTE — a heavy-duty, utility, ambercolored stock for printing.

PORT HURON COVER (Embossed) — heavy or lightweight, eleven colors and white.

PORT HURON MACHINE-GLAZED PAPERS
— made to specifications.

PORT HURON FEATHERWEIGHT BOND — a lightweight line in six colors and opaque and glaze white.

PORT HURON LEATHERETTE (Plate Finish)

— heavy or lightweight, eleven colors and white.

PORT HURON CYLINDER PAPERS — made to specifications.

Consult Port Huron about your packaging papers. We will be glad to make suggestions without obligation on your part

PORT HURON SULPHITE & PAPER CO.

MILLS: Port Huron, Michigan

NEW YORK

CHICAGO

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SAN FRANCISCO

PACKAGING CATALOG

183

N the selection of a material for wrapping, three things must be taken into consideration: beauty, utility, and economy. Metal foils combine these three requisites in a way that is interesting to packager and consumer alike. In addition to its decorative qualities metal foil is, of course, a prime protective packaging material.

The reflectivity of metal foil is of the greatest value in packaging, since the eye is most easily attracted to the brightest objects and, because metals imply quality and value, the natural result of long association with them as economic factors in our welfare.

When viewed from the decorative angle the attractive feature of foil is that it is readily available in a wide variety of colors, patterns and prints. For example, it is used either plain or decorated by embossing, printing, or lacquering. Often two or more decorative treatments are combined, such as embossing and lacquering.

Plain foil, less expensive than decorated, is used in places where there would be no particular advantage in





decoration; for example, containers for tea, and wrappers for chewing gum and some kinds of candy. Sometimes a more effective background for the printed message is obtained through embossing. This process impresses the foil with a design engraved on steel rolls, and interesting effects are available, ranging from ornate, flowery designs to the straight, forceful lines of modern art.

Many special foils available

The use of clear or tinted lacquers on metal foils gives a highly lustrous, metallic effect to the surface which is exceptionally well adapted to certain purposes. An opaque, heavily pigmented lacquer is available for applications where a tough durable finish is required. A translucent colored lacquer is more generally used for those types of packages where higher reflectivity of heat and light is desirable. Recently color printing has been developed to the point where multi-color jobs can be handled—which means patterns developed in several shades, and the whole rainbow available for selections.

To give metal foils their full range of usefulness, both plain and embossed types are obtainable mounted by suitable adhesives to various backing materials. Mounted on the proper grade and weight of backing, such as paper or transparent sheeting, additional strength, rigidity, pliability or bulk may be obtained.

The printing of metal foils (either by letterpress, lithography, or gravure) has become an extremely important factor in widening the decorative usefulness of this type of material on packages. In the use of printed foil wrappers for cartons, the packager has an almost limitless number of designs at his disposal through combinations of printing in full color or fine design, with a background of the rich, colorful lustres and patterns obtainable in metal foils. Lithographed and embossed labels for bottles, boxes and other types of containers have been extensively used.

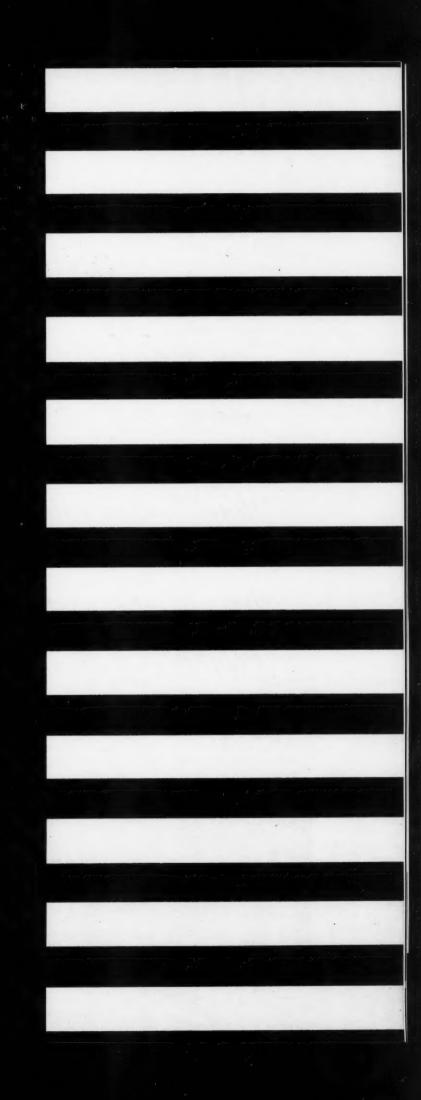
For printing large areas, plain foil is best. For a design in fine-lines, embossed foil is recommended, except where the embossed patterns are so pronounced that they tend to blend with the printing and confuse the observer. Better results will be obtained in all cases by the use of concentrated inks.

1. Three set-up boxes of same size and construction exhibit a wide variety of decorative effect through use of foil papers of different patterns. Photo Hampden Glazed Paper & Card Co. 2. Prosaic products, such as can openers and other kitchenware, are given a deluxe gift atmosphere by embossed decorative foil paper laminated to folding boxboard. Photo Reynolds Metals Co., Inc.

Louis Dejonge & Company







1776-1942

"We hold these truths to be selfevident: that all men are created equal; that they are endowed by their Creator with certain inalienable rights; that among these are life, liberty, and the pursuit of happiness."

Declaration of Independence

Crepe paper for display and backgrounds

by C. E. Wright

LMOST every kind of paper has been used as a background for adding more sales punch to one or another kind of display. The vendor of racing sheets uses winning tote tickets as a background to advertise his wares. The Declaration of Independence is displayed against a background including a greatly enlarged copy of itself.

But the papers to be discussed here are only those most commonly used as the backgrounds of display. These may be plain, printed with stock designs, or printed special-to-order. They include the ever-popular crepe paper; plain or embossed metal foils; papers bearing designs to simulate leather, textiles or wood, or other patterns; flexible corrugated papers; and some types of fancy box papers.

Available materials

This multiplicity of background papers is most desirable. Variety is the essence of good display advertising as of any advertising. Accordingly, the aggressive manufacturer and the aggressive dealer familiarize themselves with all the wide range of papers, and use them to create constantly fresh and new decorative effects in window and other displays, always seeking the background papers that will do the job best. Many of the available materials combine very effectively—the less expensive crepes in their beautiful colors for large areas, the striking foils, flints, woods and leathers for accent, and the many types of corrugated papers for three-dimensional, structural effects.

For timeliness—and every good display is timely—there are printed panels and borders, large enough to dominate the background and give the entire display the seasonal touch that can be relied on to sell merchandise. There are also seasonal borders, in continuous rolls of attractive design, to tie the entire interior of the store in with seasonal or holiday spirit.

Corrugated papers now are available in a wide variety of surface textures with novelty embossings and herring-bone effects, and not only with the conventional small flutes, but also with very striking wide flutes of classic beauty and exceptional strength. Further, non-rigid background papers, such as crepe paper, can be laminated to corrugated board for an even greater variety of unusual effects.

From the wide range of materials and printed designs now available for displays even those retailers and manufacturers with the most limited requirements can create scenic effects that up to a few years ago were possible only to the very large department store or to the manufacturer who purchases display materials in large quantities. Similarly, the manufacturer who purchases display materials on a special-to-order basis today can command display effects of greater beauty and stronger sales punch than ever before.

Crepe paper advantages

The principles explaining the purposes and power of these many different background papers in advertising and selling, and the criteria governing the selection and use of them are the same for each of them. Therefore, it is practical to write about all of them in terms of a single one, for example, crepe paper. For crepe paper is familiar to everyone; it is extremely adaptable, that is, capable of yielding an extremely wide variety of decorative effects, and it can be used to illustrate every basic principle and use of background papers except as a structural material.

Purpose of background

But first: "Why have these backgrounds?"

The answer will apply not only to the backgrounds of displays, but also to valances, trims, and panels for all sorts of units, including windows, show cases, counters, posts, ledges, demonstration tables, floor racks, and wall areas.

A satisfactory background will increase the effectiveness of a display because it:

- 1) Attracts attention, e.g., by providing color.
- 2) Ties in the merchandise or service being sold with the life of the prospective customer by creating an atmosphere that suggests the way to use or the place to use the product, and its origin or nature. This establishes a point of contact with the customer and suggests the purchase of the product to fill a need at Christmas time, on vacation, in the (Please turn to page 188)

Crepe paper, artistically used, draws the attention of the passerby immediately to the center of interest of this well-arranged display. Photo Dennison Mfg. Co.



PACKAGING CATALOG



Up to 110 seals per minute WITH NEW MOTORIZED SEALER FOR SCOTCH Collubor TAPE

You can cut your box-sealing labor costs from $\frac{1}{3}$ to $\frac{1}{2}$ with this motorized sealer for Scotch Tape.

Applies up to 110 equal length strips of Scotch Tape per minute. Each strip seals instantly on contact—no water required.

Produces a strong, positive seal that will not dry out or loosen. Available in transparent or a variety of bright colors.

Whatever your present method for sealing or tying telescope type boxes may be. Scotch Tape in the new motorized sealer can produce major savings for you.



PACKAGING CATALOG

186

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Scotch Tape holds combination deals together neatly and also gives a strong positive seal that will not dry out or loosen.

Always ready for immediate use in the Heavy Duty Dispenser, Scotch Tape seals instantly with a touch of the finger—no water required.

Almost invisible on the package, transparent Scotch Tape gives full view of each item. A wide variety of bright colors and printed designs of Scotch Tape are also available. The quick easy way of ATTACHING WINDOW POSTER





Your salesmen will welcome Scotch Tape in the refillable Plastic Hand Dispenser. Saves time putting up window posters and setting up counter displays.

This magic tape seals without water at a touch of the finger. Holds posters tightly. Transparent as glass, it blends with any color.

Scotch Tape is quickly removed, requires no scraping and leaves no residue, overcoming dealer objections to window posters.

SCOTCH Cellulos TAPE

For complete information on Scotch Tape, write Department PC.

Made & Patented in U. S. A. by
MINNESOTA MINNESOTA MINNESOTA

TRANSPARENT AND COLORS • SEALS WITHOUT WATER SAINT PAUL, MINNESOTA

PACKAGING CATALOG



Carrying product trade mark, this crepe background insures long life for the display. Photo Dennison Mfg. Co.

- home, at the beach, or in any other manner that is timely and appropriate.
- 3) Enlarges the unit of display by extending the lithographed card or the actual merchandise in such manner that it seems to fill the whole window, counter, rack, or other display unit.
- Focuses attention on the centerpiece—acts as a foil for the lithographed card or the merchandise in the window display.
- 5) Closes off the display from distractions which might otherwise divert the consumer's attention; for example, the background in a window shuts out movement in the interior of the store.

Desirable characteristics

To get results for which a good background is intended, the paper used should have as many as possible of the following characteristics:

- 1. Color: To attract attention, the colors should be striking, unusual. Also, there should be a wide range of colors; a well-known crepe paper manufacturer, for example, carries some 50 different colors in stock, which offer the decorator the opportunity to achieve unusual color combinations and dramatic effects.
- 2. Texture: Not only color but also sheen or surface interest is another characteristic that a background paper should have. Foil papers have brilliance and a mirror-like quality useful on many occasions. Papers carrying wood, textile, leather or other designs are sometimes just the thing. Crepe papers offer a texture similar to expensive fabrics, and are reversible; that is, they show a satin-like sheen on one side, a dull, soft, velvety texture on the other.
- 3. **Strength:** For ease of handling and permanence during life of display.
- 4. Flexibility: Also makes for ease in handling. To illustrate, visualize the manner in which a background paper like crepe can be used to wrap posts or other objects, turn corners, conform with or conceal an uneven surface, be compressed into a small space, or spread into a large one.

- 5. Adaptability to many treatments: This refers to special effects obtainable. Crepe paper, for example, can be pleated, draped, woven, and made into tubes; or it can be given a waved or rippled effect, and petal, fluted, or ruffled edges. Crepe can also be used to make fringes, nets, crushed festoons, Jacob's Ladders, lanterns, and decorative cut-out patterns as well as imitation plants and flowers of all kinds. This adaptability is a most desirable characteristic when it comes to creating an atmosphere to fit the product.
- 6. Opacity: Necessary to shut off outside interference which might otherwise disturb the onlooker. Crepe offers an advantage here in that it is opaque to vision, but translucent to light shining behind it. Also, this degree of translucency can be varied by the degree to which the crepe paper is stretched.
- 7. Adjustability: Because windows vary in size, the background paper sent with a display must be so planned that it can be adapted to various sizes and shapes of windows. The stretchability of crepe suggests its advantages in this connection.
- 8. Universal familiarity and availability: Important points when considering distribution of window displays on a national scale. Crepe paper in its wide range of 50 colors is available in almost every city and town, enabling the retailer, or the manufacturer's installation man, to get materials with a minimum amount of trouble for adding to a window. When the manufacturer is asking the retailer to install the display, it is of immense help that almost everyone has some knowledge of how to work with crepe.
- 9. Ease of installation: The strength, flexibility, and stretchability of crepe paper make it especially easy to manipulate.
- 10. Low cost: This factor, along with the general availability of crepe, makes it a good material for national advertisers to use in displays having nation-wide circulation.

Printed-to-order background paper

A background paper printed with the manufacturer's trade-mark or other identifying copy brings special added advantages.

- It enables the manufacturer to tie in his display closely with his general advertising, the trademark on his product, letterhead, etc.
- 2) It makes for more attractive and more colorful displays because the background can be printed in special colors, to tie in with any theme color which the manufacturer may wish to feature.
- 3) Printed background papers provide an excellent means for creating just the right atmosphere to suit the product and the season of the year.

Finally, a retailer often changes only the merchandise or a lithographed card in a window and allows the background to remain—as almost everyone has observed many times. And, as long as a manufacturer's trademarked paper is left in the window, he continues to cash in on its benefits, even though the remainder of the display has been changed.



FOR THE DURATION ...

SHELLMAR will continue to produce from the materials available . . .

For the food of the Nation and its

Armed Forces—PACKAGES offering

increased protection, heightened appeal.

For the implements of Defense—new forms of PACKING, providing greater protection, added convenience, lower costs.

For the Duration—accelerated research to meet the needs of the Times.



COLOR

Quality printing by the Gravure, Letterpress and Aniline methods — face or reverse — one color or seven.

SHEETS

Printed "Cellophane" sheet wrappers — for glistening, transparent, protective packages.

ROLLS

Printed "Cellophane" rolls —for users of automatic packaging machinery.

BAGS

Printed and unprinted "Cellophane" bags — flat, square and satchel bottom — complete selection of stock and special sizes.

ENVELOPES

Printed and unprinted "Cellophane" envelopes — for beauty, protection and superb display.

SHELL-PAX

The "Cellophane" package with a cardboard back—printed "Cellophane" on face and sides for salability—printed or unprinted backboard for rigidity and protection.

TRAY-PAX

A combination of a printed "Cellophane" sheet with a cardboard stiffener, plain or printed—widely used for packaging meat items.

SHELL-PLI

Colorful printed Cellulose laminated to paper or board — for box wraps, magazine or catalog covers, cartons, etc. — offering brilliant colors, glossy soil-proof surface.

SHELL-GLO

Lamination of clear Cellulose to printed paper or board — providing intensified colors, high gloss — for brochures, display cards, cartons, etc. (The face of this insert is laminated by the SHELL-GLO process.)

SHELLMAR



Corrugated papers for display

by Paul Thompson

ODAY'S trends towards multi-line and more diversified displays are encouraging new trends in display materials. These new decorating materials, in the aggregate, form a very useful kit of tools for the designer of displays.

Types of materials

Crepe papers are widely used because they are easy to handle, inexpensive, and obtainable in a wide range of colors and varieties. The use of crepe paper with lithographed or printed displays provides an unusual degree of flexibility and makes it extremely easy for the window trimmer to adjust his display to fit various sizes and types of windows.

Not only has crepe paper been used to form an attractive setting for lithography, but it has also added the strong appeal of color to the display. Another reason for its popularity is the fact that by decorating the entire window, the overall size of the display as an advertisement is greatly increased.

In addition to the colorful and versatile crepe paper, a number of other papers are also favored: plain or embossed metal foil, imitation leathers, papers bearing photographic reproductions of textiles, wood grains and other textured surfaces, flexible corrugated papers and some types of fancy box papers.

Semi-rigid and construction materials

Color corrugated: The introduction of single-faced corrugated paper opened up an entirely new field of pos-

1. Window with printed bamboo design on corrugated for background, and inverted flute corrugated to form pedestals for an effective, eye-catching product display of clocks. Photo Sherman Paper Products Corp.

sibilities for display. From the point of view of color, its three-dimensional surface offered a great range of tone from highlights and shadows. From the structural point of view, its one-way rigidity saves time in installation. Widths of roll up to six feet meet practically all window requirements and these materials can be used vertically as well as horizontally.

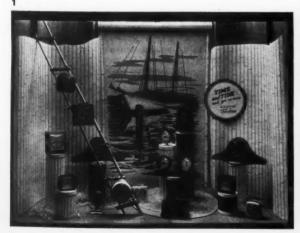
The corrugated papers most widely used today have ¹/₄-in. convex corrugations; others have inverted, or concave, corrugations 1 in. wide. A number of specialties have appeared with both convex and concave flutings up to 4 in. wide and in rolls up to 8 ft. wide and 10 ft. long.

Many corrugated papers have markings for scallops and other effects on the back to facilitate accurate cutting but for use in quantity the corrugated paper should be die-cut. This service is offered by most manufacturers of display materials.

Construction corrugated: In this group are the papers that utilize corrugations only at the back for their advantage of one-way rigidity. Surfaces may be plain, lightly embossed, or crepe laminated.

In addition to its more frequent use—unrolled in a horizontal direction—this type of paper can be quickly changed into a rigid construction material. By carefully cutting a line along each side of the roll, just through the tops of the corrugations, the paper can be folded back into side panels which keep it firm, whether in a horizontal or a vertical position. Material can be cut to order in this way by the manufacturer. It can

2. Background for entire window is crepe-surfaced corrugated. Wide inverted flutings, used horizontally, form background for lithographed piece and give it third-dimensional effect. Photo Sherman Paper Products Corp.





PACKAGING CATALOG







3. A heavy product, used on the floor of the consumer's home, is displayed on the dealer's floor. Pillars formed of decorative paper accentuate a spot that might otherwise be inconspicuous. 4. Foundation and upright members of colored corrugated provide elements which unify various parts of a display that might otherwise present a "cluttered" appearance. 5. Here a large, tall window—because of judicious composition of purely decorative materials—houses an effective display composed of small packages and easel cards. Photos by Reyburn Manufacturing Co.

then be shipped in compact rolls and transformed by the installer into a rigid display background.

Printed or processed display accessories: The manufacturer now has at his command an ever-widening range of stock materials, printed or processed in roll form for use as accessories. Many of these materials are made with corrugated backing for ease of installation. Typical designs include stone wall, ice blocks, fences, red brick, bamboo, marble, awnings, many stock scenic numbers, seasonal and patriotic motifs, and a great range of other patterns which can be used to set the stage in keeping with the theme of the central display. Die-cut accessories like icicles can also be obtained. Special background effects can also be printed to order and furnished in rolls or sheets, with or without the corrugated paper backing.

Printing processes and surface treatments

Depending on the quantity, design, and color requirements, the printing process for display materials in roll form may be rotogravure, offset, or wall paper press. Rolls can be printed up to 60 in. wide, with designs repeated at intervals up to 7 ft.

Rolls can also be processed by the use of an air brush or spray gun, and sheets can be processed by silk screen. The many surface effects include "flocking" to give a velvety effect, "fluttering" with metallic or mica particles to give sparkle, special paper finishes, and lamination with crepe paper or fabrics. Corrugated paper can be die-cut like cardboard to register with the printed matter in a display, if desired.

Methods of use

Backgrounds and settings: Manufacturers use these materials most frequently in setting the stage for lithographed and merchandise displays. A summer display may be enhanced, for example, by using a cool scenic view in the background. Christmas displays may be made more appealing by using a seasonal background, a brightly colored Santa Claus, or red brick for a fireplace.

Pedestals and columns are among the most important uses. Columns with a lithographed display can add breadth and bigness, and can help to fit the display to the window. Pedestals provide the quickest method for displaying merchandise. Both are quickly made in many styles by using round, rectangular, or hexagonal caps-sets with corrugated paper for the upright. Corrugated material used for columns can be die-cut so that products can be fitted into the column.

In addition to these more widely used display materials, the national advertisers can procure from the leading manufacturers an almost unbelievable range of accessories such as artificial bark, grass, leaves, and flowers.

Complete displays: Many styles of display units can be designed from corrugated materials for use by the silk screen process. These are an advantage for the smaller manufacturer whose quantities are not large enough to warrant lithographed displays. After proc-



You'd need a catalog big as a metropolitan phone book to list all the packaging and display combinations that can be made from the basic forms named on the dial. For your product, tho, you want just that one combination which will put you through to expanding sales and profits. No simple job, especially in these days of priorities, allocations, and substitutions. But a call to Dennison will minimize your problem. Here, in one single organization, you have at your fingertips all these basic forms, plus designers skilled in creating just the right packages, packaging accessories, or displays for your product.

Dennison Manufacturing Co.

WRITE DEPT. P 42 FRAMINGHAM, MASS, FOR MORE INFORMATION

SALES OFFICES IN ALL PRINCIPAL CITIES

essing, these can be rolled into a compact package, with easels or other display accessories, for economical shiping, and convenient for quick installations.

Interior wall and ledge displays: Many stores make good use of wall areas for valances and ledge advertisements. These can be printed or processed in roll form with the corrugated backing that prevents sagging.

Methods used to buy and ship displays

Complete set-up to installation house (or retailer): In this case, the display and materials are shipped complete with detailed instructions to the installation house or the retailer. Assembling may be done by the advertiser, the lithographer, or manufacturer of display materials. This method insures complete control over each display, as the installation house or retailer receives the lithographed items, dummies, and all accessory materials at one time.

Drop shipments by display manufacturer:

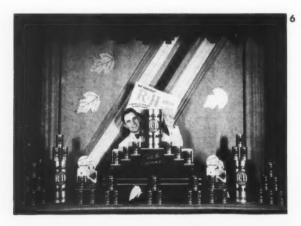
Most manufacturers of display materials will assemble and drop-ship these materials as ordered by the manufacturer. This method relieves the advertiser of the detail of shipping and insures that the installation house or retailer will have the correct material, and will not be handicapped by possible shortage in local stocks. Like the first method, this insures that the correct materials and colors are used as called for by the designer in his original planning.

Bought by installation house or retailer:

Under this method, lithograph displays and dummies are shipped to the installation house or retailer together with complete instructions on the use of other materials which may be purchased locally. If the indicated items should not be available locally, the installation house would have to make its own decision on the materials that could be substituted. The retailer would probably not purchase the suggested materials.

Manufacturers' advisory service

Leading manufacturers of display materials maintain staffs of men who have graduated from installation work and know the answers to all the problems of displays. They are well acquainted with all the technical processes used in the manufacture of displays and accessories, and are well equipped to render both advisory and creative service, to suggest ideas and methods of carrying them out for both window and interior displays.





6. Intelligent use of decorative background accessories, supplemented by liberal use of actual product, has made a window-filling display of a moderate sized lithographed piece. 7. Crepe paper, cleverly handled, simulates tropical surroundings and creates atmosphere tying in with the geographical theme of the lithographed piece.

8. Decorative paper with wood-grain design for background, augmented with pedestals formed of fluted corrugated for display of product, creates environment which lends an air of quality. Photos Reyburn Manufacturing Co.



PACKAGING CATALOG

LOOK AHEAD WITH

RIEGET PAPERS

your future package

FOR ECONOMY · EYE-APPEAL
PROTECTION · PRODUCTION



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Decorative tissue papers

HE primary function of tissue paper is to add refinement to the packaged product. Its use adds a touch of character to articles as far apart as a whiskey bottle and a piece of fine lingerie. Literally, hundreds of products can gain the impression of finer quality by the simple and inexpensive process of wrapping them in a good quality sheet of tissue.

There is, however, a secondary function of tissue paper. To many articles it gives protection during shipment—a type of protection which varies with the nature of the article and the kind of tissue used.

There are, of course, different grades of tissue with different characteristics. For all-around packaging, where both appearance and protection are important, the most popular grade is No. 1 white. This is a full bleached tissue made of an all sulphite finish. Color, strength, and formation, of course, vary with the manufacturer, but it is not difficult to select a sheet with good white color and strength and a texture which promotes the idea of quality in the product.

Where protection is the primary object and appearance is secondary, manila or No. 2 white tissues are often used. This is especially true in packing garments which are unpacked later before being displayed to the buying public. The rissue, stuffed into sleeves and padded around the garment, prevents much of the wrinkling which otherwise would occur. Manila and No. 2 white tissue is satisfactory for this purpose even though it is not pure white in color and is not as strong or uniform as No. 1 white. It usually contains around 40 per cent groundwood pulp, a cheaper grade than sulphite, which reduces its strength and appearance but, at the same time, increases its bulking qualities.

Non-tarnish tissue

For wrapping such articles as silverware or metal products which tarnish easily, special non-tarnishing tissue is made. There are two kinds—white and kraft. White anti-tarnish tissue, or silver tissue as it is sometimes called, is a specially treated No. 1 grade. It contains a higher grade pulp and must be handled more carefully all through the manufacturing process than regular No. 1 white tissue. Every trace of sulphur, which promotes tarnish, must be eliminated.

Most kraft tissue will pass this test, too, for the reason that kraft pulp is made by a different process than sulphite pulp used in manufacturing white tissues. Kraft tissue, however, has the same color as ordinary kraft wrapping paper. Hence its use is generally confined to the wrapping of hardware items, machinery parts, etc., while white silver tissue is used for wrapping higher quality articles made of gold, silver, copper, brass, etc.





Transform any article into a gift by means of decorative tissue and ribbon, easily removed to permit replacing "carry-overs" back in stock. Finer quality is also imparted to product through wrappings. Photos Benmont Papers, Inc.



Gift wraps of decorative tissue processed with a simulation of rotogravure proved a popular and inexpensive method of bidding for the Christmas shopper's favor. Inks for these wraps are rub-proof, spot-proof and moisture-proof. Another feature is the water-proof paper. Photo Benmont Papers, Inc.

Besides these grades, No. 1 tissue is made in a wide range of colors offering almost unlimited possibilities for a pleasing, harmonious effect. Manufacturers who cannot put color into their products find that wrapping in colored tissue is an inexpensive way of taking advantage of the sales appeal of color. Others use colored tissue to identify different products and still others find that certain colors serve a purpose which no other packing material can fulfill. Shoe manufacturers, for example, invariably use black or brown tissue in packing suede shoes to eliminate all possibility of white lint.

Decorated tissues

Both white and colored tissues are also available printed with attractive designs for everyday and seasonal use, which opens up another wide field for the use of tissue in packaging. Almost any everyday item wrapped in a sheet of tissue decorated with a Christmas design, immediately makes a strong bid for sale as a Christmas gift. Carry-overs by the retailer can easily be taken care of by removing the tissue and selling the item as regular everyday stock.

A new feature of the printed tissues offered for this year is water-proof paper. The inks which are used in printing the attractive designs which are available are rub-proof, spot-proof and moisture-proof, which adds greatly to the suitability of printed tissues for various packaging purposes.

Thus far we have dealt only with the manufacturer and producer. There is another important packaging use for tissue paper, namely, in wrapping merchandise at the point-of-sale in the retail store. Here, appearance assumes first importance. In most retail stores, especially up-to-date department stores, sales rooms are made as attractive as money can make them. Everything possible is done to provide an attractive background for the display of merchandise. Fixtures, light-

ing, draperies, decorations—all are used to build up an atmosphere of quality. Everything is calculated to favor the merchandise.

When any article is sold, it must be taken away from these attractive surroundings and stand on its own. The next time the customer sees it is in her home. The only way a store can bridge the gap is by sending out merchandise in a package which carries into the home some of the atmosphere of the sales room. In creating such a package, tissue is of the highest importance not only because it adds refinement, but also because it is the one packaging material that comes in immediate contact with the article wrapped.

All department stores also are frequently called upon to wrap articles purchased as gifts. Here tissue is, if anything, even more important than in wrapping ordinary packages. The article is usually placed in an attractive gift box, lined with pure white or colored tissue and the box itself is then wrapped in tissue and tied with ribbon or tape. It is surprising how attractive packages can be made and how substantially gift sales can be increased with an intelligent, forward-looking gift-wrapping policy. Decorated tissues of appropriate designs and colors are used extensively for wrapping during gift-buying seasons.

It must be mentioned, too, that both plain and waxed tissue, cut into fine, even shreds find an important use as a soft, clean and highly resilient packing material. Green and purple shredded waxed tissue is the standard material for packing Easter candies. Plain and waxed tissue excelsior is used for packing.

It is obvious then that tissue paper is already an important packaging material. It is destined to become even more so. The good taste of the American people is gradually improving. Packagers are obliged to improve right along with it. The use of tissue is one effective means, and an inexpensive one, of doing so.

Decorative ribbons and ties

CELLULOSE RIBBONS

HE use of cellulose ribbons has become more important in recent years. These ribbons have a leading place along with silks, rayons, tinsels, cotton and other classifications of materials used in the manufacture of decorative ribbons and ties. In normal times cellulose ribbons also compare most favorably in price with other materials.

The source of supply of cellulose ribbons will undoubtedly be limited due to wartime restrictions on cellulose materials, however, such restrictions are for the duration and the future will see new uses and developments. Although the average user of decorative tying materials once considered cellulose ribbons hard to handle, new techniques and facilities for handling make them easy for large users to manipulate.

In essence, cellulose ribbons are used only as decorations. They do not perform the function of a closure, such as string, and are intended merely to embellish a gift package and make it more attractive. In recent years, many merchants have recognized the value of cellulose ribbon as a decoration for a consumer package to make it more presentable. Nothing gives quite so sparkling a note to a package as a cellulose ribbon.

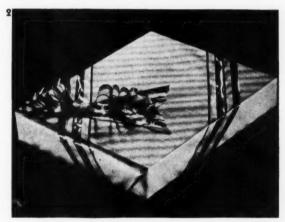
In the past cellulose ribbons found their greatest popularity at such holiday seasons as Easter, Christmas, or Mother's Day. Now, however, they are being used as an all-year-round decorative ties on commercial packages. The past year has seen an increased interest in the use of cellulose ribbons in the retail stores. It has been found that by packing hard-to-move merchandise, or merchandise whose association might seem somewhat remote from the spirit of the holiday, a definite gift package might be made. Such articles as an assortment of kitchenware, when taken from the retail counter, put into an attractive box, and tied with cellulose ribbon, has made an acceptable Christmas gift. Ordinarily, the individual items of kitchenware would never have been considered as an appropriate gift.

The industrial user of cellulose ribbon has found many advantages; notably just now, a decided price advantage. Constant education in the use of cellulose ribbons has had its effect with large industrial firms who today can use this ribbon quite readily.

(Please turn to page 198)

1. Ingenious tying of plain tinted cellulose ribbon with turnover edges imparts festive character to a package. 2. Good taste and good cheer are betokened by wellchosen ribbons and wrappings. 3. Standard ribbon patterns are available in a wide variety of metallic and striking colored effects. Photos Freydberg Bros.-Strauss, Inc.







PACKAGING CATALOG



Executive and Sales Offices: 122 E. 42nd Street, N. Y. - Works: Fredericksburg, Va.



Blake, Moffitt & Towne Canada:

Sylvania cellophane has proven itself essential in Civilian use as a selling medium and as a protective material.

National Defense and essential Civilian demands are today absorbing our entire production.

When the emergency is over we promise that Sylvania will play its part in producing Sylvania cellophane for Civilian use as it is now doing in cooperation with our Government for the needs of National Defense.

Recent developments in cellulose ribbons have been the printing of unique and unusual designs for the individual holidays and intricate and attractive methods of tying them have been developed during the past year to create unusual gift packages. These ribbons have also gained wider distribution through many new types of outlets. The narrow widths have been packed on spools attached

to a dispenser of some kind. This convenient device has been widely accepted by the consumer as well as by the industrial user.

New and interesting interpretations in the design and construction of cellulose ribbons have been introduced by various manufacturers, and they look forward to increasing volume of business when times are again normal.

COTTON RIBBONS

HE fancy tying material—the truly American tying material—which has made the most sensational advances during the past twenty years is the cotton ribbon known as "ribbonette."

This material is made by a special process from the finest grades of American grown cotton yarns. It is made flat with a smooth satiny finish, or horizontally crimped, or in a moire design; in any width from $^3/_{16}$ in. to $1^1/_4$ in.; and in any color or combination of colors, made to order.

No one can possibly overlook the meaning of those words made to order. When you buy ribbonette you are buying a product actually manufactured to be an integral part of your package itself. The ribbon is tailored to your package, and made in colors to match it. It can be made in one color or in twenty, in a plain shade or decorated with printed designs, flowers, and conven-

tional ornaments. Best of all, it is cheap, and more plentiful today than ever before.

If you are making fancy bedspreads and want a tying material that will do more to sell that bedspread than anything else possibly could, this type of cotton ribbon will do the trick. If you want to decorate asbestos pads so that they cannot fail to catch the prospective buyer's eye, this is the ideal thing. If you want to tie up a radio as a Christmas present, a wide ribbonette in some of the attractive special Christmas designs will make the prospect eager to take it from the dealer's shelf. For a few pennies it magically transforms any year-round package into a fascinating Christmas package. It makes no difference whether it is a pair of shoes, a loaf of bread, a refrigerator, a blanket, a table cloth, a box of candy, or an evening gown, there is a special ribbonette to tie around every kind of article that can be packaged.

Designed and colored to order, intended to be an integral part of the package itself, the ribbons illustrated offer unusual decorative possibilities. A year-round package is magically transferred into a gift package for any occasion or holiday at very low cost. Photos The Chicago Printed String Co.





PACKAGING CATALOG

PRE-TIED BOWS

NY package that is beautifully conceived and designed and carries merchandise of quality and distinction, deserves a beautiful tying material and an outside bow that is properly made as well.

Some of these lovely packages with bows badly made in tying material of questionable quality could best be likened to a beautiful girl in a lovely gown but with

smeared lipstick and bad make-up

The tying of bows calls for careful and highly skilled labor. The routine requires that the packaging material be cut to exact lengths, and templets or tools must be set up so that each bow shall be uniformly made, yet have that hand-made look. All this can be accomplished only by workers who have done the same type of work day in and day out. They must be carefully selected from large groups of operators who have become skilled in this type of work.

The use of pre-tied bows also gives a manufacturer the opportunity to figure his merchandise cost accurately because he knows exactly what the bows are going to cost. Producers who attempt to tie their own bows are

faced with the following problems:

1) Lack of uniformity: Because they are not constantly doing this type of work, they produce bows with great variation in quality.

2) Expense: When all charges for the labor and overhead involved are itemized and set against the making of these bows, producers would probably find that

pre-tied bows are as cheap or cheaper.

3) Efficiency: Where large quantities are needed to meet demands the services of a bow-making organization are required.

Manufacturers of ribbons are frequently called on for advice in the styling of a package, and they usually are able to suggest just the material or manner of tying the bow that will most enhance the beauty of the package in question. Long and varied experience in such problems implies a wealth of useful ideas which may not occur to those in an organization that is not familiar with all

types and styles of bow making.

Designers and manufacturers should make use of this service in companies adequately equipped. It will go a long way towards helping many of the bow producers in the packaging industry.

Shredded paper and cellulose

HREDDED paper, as its name implies, consists of long slivers of paper materials forming a resilient mass useful in packaging as a protective padding or cushion. In this respect, it provides a number of advantages over excelsior, since it is somewhat less inflammable and it does not break down into dust and lint.

Originally old paper was utilized and aesthetic considerations ignored. Much such shredded paper is still used for packing items into crates for shipment. Many firms use machines to shred their own paper waste.

However, packagers have found that decorative varieties frequently meet special needs. Waxed glassines, cellulose sheets, plain, colored and fancy papers are today shredded to provide cushioning effects of great beauty, capable of being used in conjunction with the finest

packaging materials.

For irregularly shaped objects, which do not lend themselves readily to standard sizes of containers, shredded papers serve as the means of adjusting to the size of the outer pack. This is true in the case of baked hams, and such fruits as melons, apples, pears, and grapes. Products packed in glass, such as preserved fruits, dried fruits, jellies, etc.,—often packaged in multiple units for gift sets and sampling purposes, are frequently protected by shredded paper both to guard against breakage in

shipping and to provide for greater eye and sales appeal.

Cellulose shavings in gay colors are also being extensively used in window displays, especially in stores that sell foods and liquors.

These Schrafft gift packages consist of assorted objects of varying shapes. Surrounded in their container by specially shredded packaging material, these gifts enjoy maximum protection. Photo Sylvania Industrial Corp.



PACKAGING CATALOG

RIOR to priorities the thinly rolled sheet of metal foil had attained a unique and still ascending prestige in the packaging of perishable goods. Protection against all the ills that such merchandise is heir to had gained for this metallic wrapper unquestioned recognition and acceptance in this field. Its pre-eminence has been built upon its use as a protective as well as a decorative packaging material and a consideration of these factors, despite present restrictions dictated by war needs, may be today's solution of tomorrow's pack-

aging problems.

Protection through the use of metal foil has been increased for packages of such widely varied merchandise as tobacco and ice cream, candy bars and sausage, chewing gum, cosmetics, tea, yeast, soap, drugs, dairy, bakery, and bottled products. The enemies of these commodities, against which metal foil guards, are loss of freshness, and of the original potency of their taste, aroma, and health-giving qualities; spoilage by penetration of heat, light and moisture; lack of cleanliness in an article itself or in its containers, such as at the mouth or neck of a bottle. Other recognized advantages of this wrapping material are its original inexpensiveness and its light weight which make it cheap and easy to handle. Also it has ready adaptability to every shape and size of package and to various types of wrapping processes.

Metal foil is a sheet of aluminum or aluminum alloy .005 in. thick or less. For commercial wrapping purposes the gauges run from .00035 in. to .0005 in. Comparatively free from pinholes at these gauges, the foil is impervious to all light wave lengths and is highly resistant to water-vapor and air.

One of the most important of the protective properties of metal foils is their ability to resist penetration by moisture. Metals such as aluminum are completely impervious to moisture and to all gases and vapors. The only way gases and vapors can pass through foil is through minute holes or fractures in the material itself. In the majority of cases where such openings exist, they are usually so small that they permit the passage of only a negligible amount of water-vapor.

Valuable protection against heat

The more highly reflecting of the metal foils offer an additional advantage in packaging in that they act as an insulating material against the radiation of both visible light and infra-red (heat). This is important when the contents of a package should be protected against the heat of the sun. These bright foils are especially efficient in reflecting the heat from a hot water or steam radiator or a hot stove.

Obviously, in order to secure the maximum protection against moisture with metal foils, all folds and joints should be tightly sealed. However, it is only rarely that such complete protection is required or desired and it is possible, by lapping and folding, to make joints which permit only a minimum of moisture to pass in or out of the package.

Where the prevention of excessive moisture changes is





1. Tobacco pouch made of two layers of aluminum foil fabricated with rubber hydrochloride sheeting. 2. Foods wrapped in aluminum foil are afforded maximum protection against spoilage due to penetration of wrapper by light, heat and moisture. Photos The Aluminum Co.of America

PACKAGING CATALOG

for the Unusual in tying materials choose Libbon

made from high grade cotton yarns

CHICAGO PRINTED STRING CO.

225 FIFTH AVE.







the important consideration in packaging, yet it is not desirable or practical to seal the foil completely, other sealing components, such as cellulosic jackets, or rubber hydrochloride sheeting, can be combined in the package as an effective means of minimizing the passage of moisture through seams in the foil.

When a given packaging problem indicates the need of backing the foil by fibreboard, cellulosic film, or any of the various grades and types of paper, the thin metal sheet is laminated to the chosen reinforcing base by wax, a water-soluble adhesive, or—in the case of cellulosic film—by a thermoplastic adhesive. The foil is thus made tough, rigid and pliable, and also more resistant to air and water-vapor wherever occasional pinholes may occur.

Versatility of metal foil

Uses of metal foil for protective packaging fall mainly under five heads: cartons, bags, envelopes, labels, and tight wraps. In packaging cartons, the foil is used sometimes as a liner for solid-fibre containers, sometimes as an outer wrap. It may be solidly glue-laminated to the board, to form an outside surface which may be printed or embossed. Or, for extra protection, it may be laminated to two sides of the board. Cartons made from these laminated boards were being used extensively in packaging tea, spices and other dry powdered or granulated products before the war production program curtailed the use of them. They may be heat-sealed for permanent exclusion of light and air and can be provided with pouring spouts.

Metal bags, made by laminating thin sheets of foil to plain bond, glassine, waxed, or kraft papers, provide excellent merchandisers for coffee, potato chips, peanuts, and other products which lose quality through either the loss or absorption of moisture or through the deteriorating effects of light. The same considerations make the tight-wrap package especially popular for prunes and other semi-dried fruits, for cake mixtures, and other hygroscopic items.

Just previous to the present recession, long strides were being made in the direction of heat-seal foil packages, which foreshadowed production of a hermetically sealed container and, in many cases, a resultant simplification of packaging processes. Commercial promotion may be curtailed indefinitely, but technological improvements are still progressing at such a rate that the future performance of metal foil promises to be greatly improved over the already excellent brand of service that it is rendering to the food, tobacco, drug, and cosmetic industries.

3. Freshness, original potency of aroma, sanitation, are insured for an immense variety of confections by aluminum foil. 4. Almost universal use of metal foil for cigarettes is evidence of smokers' preference for moisture-proof packaging. 5. Salada's heavy foil package for tea is almost a trade-mark—time tested as moisture-proof and non-contaminating. Photos The Aluminum Co. of America



Reostyle INC.

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PRODUCERS OF THE ONLY COMPLETE LINE OF TRANSPARENT CONTAINERS - CELLOPHANE - GLASSINE - PLIOFILM - RIGID ACETATE

National Emergency.

PACKAGING CATALOG

Printed transparent sheeting

N the order of their development, there are three major processes of printing on transparent sheeting. These are as follows:

- Letterpress, which employs relief engravings and oil inks.
- Gravure, in which impressions are made from etched cylinders with lacquer inks.
- Aniline, using spirit inks and, usually, rubber printing plates.

Which process would be most satisfactory depends on the following important factors:

A. Art work: Most designs can be printed in any one of the three processes with striking results. However, art work involving fine halftone screen, soft tone work or color process printing should be printed in the gravure process.

B. Nature of product: Certain products contain chemicals either inherent or added by processing which may attack the inks. For example, oil of wintergreen used in confections, such as mints, attacks certain aniline ink colors, whereas letterpress or gravure inks remain fast and, in the main, inert.

Packages for fruits processed with sulphur dioxide often employ the use of a protective metallic ink as a base for other colors. Most wrappers for these products

have been printed in gravure, although some packers are using letterpress and aniline with satisfactory results.

Meat products of high grease content and moist items, such as fish, require letterpress printing.

But progress is being made steadily in ink development, and a printing problem existing today may be solved tomorrow. For example, moth balls, crystals and cakes containing naphthalene or paradichlorobenzene formerly required letterpress inks only. Today, a special aniline ink is available, and gives satisfactory results when used with this product.

C. Type of film used: While the type of film does not limit printing to any one of the three processes, the nature of the product and its handling in production and in the finished package form should be carefully considered in selecting film and printing.

Letterpress printing

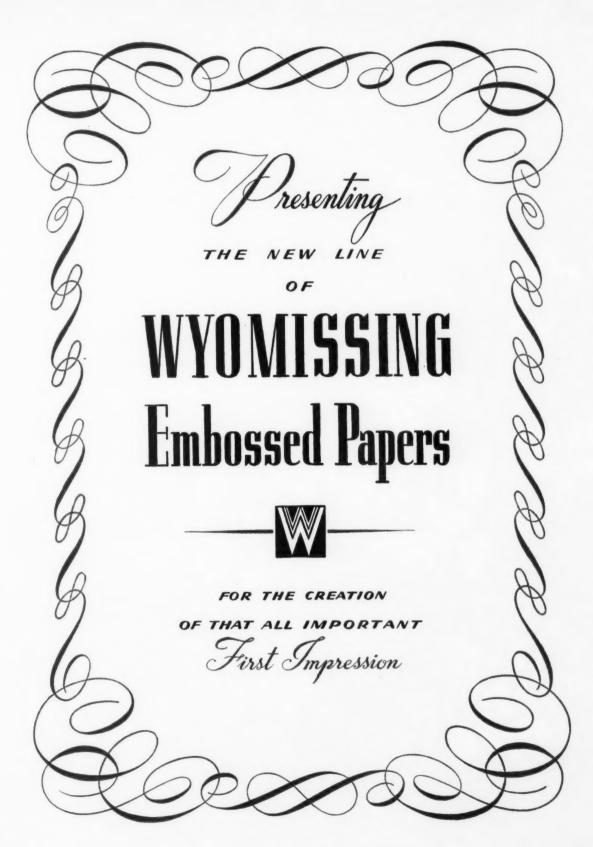
This is the best known of all printing methods and is the one by which the first successful printing on transparent cellulose was accomplished. However, due to the temperamental nature of the film, really successful commercial production was not attained until roll-fed presses were employed. These required the addition of many devices, such as means of continuous control of the web, or sheet, during the printing operation, to





1. Chemically treated broom kept clean but visible by transparent cellulose sheeting during journey to consumer. Photo Shellmar Products Co. 2. Transparent sheeting of rubber hydrochloride maintains moisture content and preserves food value of fresh vegetables. Photo Goodyear Tire & Rubber Co.

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WYOMISSING EMBOSSED DADIDG

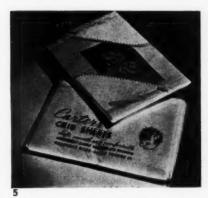
packaging craftsmen an entirely new assortment of beautiful new patterns and colors in Fast-to-Light and Reflectone Flint Glazed and Mat Papers.

A Sample Book showing the Embossed patterns available on WYOMISSING PAPERS may be had upon request.

WYOMISSING GLAZED PAPER CO.
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3. Transparent wrap insures flavor of pies. Photo The Dobeckmun Co. 4. Product looks appetizing through printed transparent bag. Photo The Dobeckmun Co. 5. Printed acetate wraps keep textiles clean and sanitary and carry information needed on product and brand. Photo Celanese Celluloid Corp.

insure registered printing of successive colors. Several types of roll-fed presses are presently in use. In some types, a number of printing or plate cylinders are arranged around a central platen cylinder and the printing is done on a continuous web, which is then delivered in the form of either sheets or rolls. Other types of presses cut the sheet to a predetermined size before the printing impression is made.

Letterpress printing may be done on either surface of the cellulose film and, where it is not objectionable for the printed side to come in contact with the product to be packaged, the use of reverse or underside printing permits the retention of the full gloss, or sheen, of the cellulose, thus enhancing and vivifying the colors of the inks. Letterpress printing is also employed almost exclusively where the printed cellulose is to be used on moist or greasy objects, notably on meats and fish.

Gravure printing

This process came into use only after letterpress printing on transparent cellulose had become fairly well standardized and its limitations had been explored. The inks used are of the fast drying, lacquer type, which not only eliminate the use of slip-sheets, but permit the printer to obtain a degree of opacity impossible with oil inks, as well as to print color upon color in a continuous operation. The pigments used in gravure inks permit also, the obtaining of very brilliant full colors and shades, although only a limited range of tone effects are at present available.

Since gravure printing can only be done through the use of intaglio-etched cylinders, the cost of engravings for this process is relatively higher than for either letter-press or aniline printing and the combination of more than one design on a set of cylinders is impossible, unless all of the designs can be executed within the limit of the number of colors available on the press and unless each design, in repeat runs, can be produced at the same time and in the same proportion as to quantity as the original run. At present, presses are available where as many as seven colors may be produced at a single run.

The gravure method produces the highest type of printing at present available on transparent cellulose and

particularly attractive effects are obtained through the use of reverse printing. Halftones can be satisfactorily reproduced, provided the tone work can be underlaid with a neutral color, such as white. Gravure printing is not recommended for use where the product to be packaged is greasy or has a high moisture content.

Aniline printing

This type of printing is the latest to come into use on transparent cellulose. Because it is generally done through the use of rubber, rather than metal printing plates, and because it employs fast drying inks, eliminating the necessity for slip-sheeting, it was originally hailed as a means of producing printed cellulose more economically than the older processes. However, the limitations of the processes and inks originally employed made aniline printing less satisfactory from the standpoint of package appearance and users of printed cellulose were loath to adopt it, even at somewhat lower costs. Since aniline printing was originally introduced, much progress has been made, notably within the past year, in improving the results obtained and some highly creditable work is now being turned out by this process. Naturally, the improvement of the process involved the use of more expensive materials and equipment and the cost of aniline printing today is probably on a par with that of letterpress.

Tone work in aniline printing is possible only to a very limited extent and its use on moist or greasy products, particularly foods, is somewhat questionable. It does give excellent opacity, brilliant colors and, particularly in surface printing, a lustre that is superior to that of either letterpress or gravure.

The development of methods of printing transparent film in continuous rolls has contributed largely to the expanded use of such wrappers in mechanical packaging. Starting with the wrapping of bread, this application has spread into many fields. Controlled cut-offs, made possible by the use of photo-electric cells, permit "spot" wrapping the printed film on cartons or open faced trays. Photo-electric cells also permit the use of printed transparent rolls on machines which automatically form tubes, fill a predetermined amount of product and



6. Holiday wrap, with snow scene and old-fashioned coach, brilliantly color-printed in reverse on acetate sheeting by Shellmar Products Co. Photo Celanese Celluloid Corp.

deliver individual completed packages, crimp-sealed top and bottom.

General information

Tints: Both gravure and aniline inks may be used in producing tints on transparent cellulose. A wide range of colors is available and the tints do not impair the gloss of the film. They alter its transparency only as the color of the tint reacts on the color of the product packaged. Letterpress tints are generally unsatisfactory, being inclined to muddiness.

Opacity: As mentioned in preceding paragraphs, gravure and pigmented aniline inks produce impressions of greater opacity than letterpress, although a degree of opacity suitable for many purposes can be obtained by the latter process.

Metallics: The gravure process is pre-eminent for printing metallics. Brilliance or opacity can be obtained with a single impression, although two layers of color may be employed where extreme opacity is desired. Letterpress metallics are very satisfactory in surface printing, where the metallic may be underlaid with a sizing, as of yellow in the case of gold, or white in the case of silver. Where reverse printing is employed, letterpress metallics cannot be underlaid and are correspondingly lacking in opacity. Satisfactory metallics for aniline production have not as yet been developed. Reverse printing: All three printing processes may be employed to produce reverse printing, although letterpress is inferior to either gravure or aniline for this purpose, except where solid lays of full color are used.

Register: Where fine register is required, the letter-press process is superior to either of the others. The use of metallic plates, giving sharp, controllable register, permits the production of effects not possible with either gravure or aniline. Where the design is such that color may be superimposed on color, register often is of negligible account in gravure or aniline work.

Tone or screen work: Bendays and halftones are well within the range of most good producers of letter-

press printing on transparent cellulose. Halftone work is possible to a considerable degree in gravure, with a limited range of benday screens or stipple effects also available. The employment of such effects in the aniline process is definitely limited to date.

With the amount and character of the research work now going forward in the field of cellulose printing, it is not too much to expect that four-color process work will eventually be done on this material.

Package forms

Printed transparent cellulose is available in a variety of forms, the better-known of which are listed below:

Sheets: These are available in any type of film, printed in from one to seven colors, in practically any size.

Rolls: Continuous printed rolls of any type film are obtainable in widths ranging from ¹/₄ in. to 36 in., printed in from one to seven colors. Printed designs may be continuous or may be spot-registered for use on automatic packaging machines, where the printed design is accurately located on the package by means of a photo-electric cell device or an 'electric eye.'

Bags: Single or double wall bags of transparent cellulose, printed in from one to seven colors are available in flat, square and satchel bottom styles. Nearly all types of film may be employed in their construction. Sizes range from very small bags, in the flat type, up to 10 in. by 18 in. in the satchel bottom style.

Envelopes: Both die-cut and roll-cut styles are available in wide range of sizes with either side or end openings and with printing in any number of colors up to seven. Most types of transparent cellulose can now be successfully fabricated into envelopes.

Specialty packages: Tubes for cigars and other slender objects, such as tooth brushes, are available, printed in as many as seven colors and in most types of film. Other packages, combining printed cellulose faces with backs or affixed pieces of board or other material, may also be had. Sheets or rolls of printed cellulose, affixed at one or both sides to corresponding sheets or rolls of foil, glassine and other materials, are available. Other types of packages employ sheets or rolls of printed cellulose in combination with folding cartons or with fibre plates or trays; in some instances, such combination packages are supplied with retaining rings or other essential parts to make a complete package.

Laminated printed cellulose: This comparatively new development is treated at greater length elsewhere in this book. For the purpose of this article, it may be said that printed cellulose, laminated to a variety of base materials, is available in sheets, rolls, specific types of bags and folding cartons.

Window faced wraps: These have been developed essentially as a means of combining the advantages of opaque and transparent materials for wrapping purposes. They are formed by pasting together continuous alternate strips of paper and transparent film. In most instances, moisture-proof cellulose and grease-proof glassines are combined. They are most widely used in the baking industry, for the wrapping of candies, meat products, etc.

WHEN IT'S OVER

Twenty-four hours of work each day is our lot for the present and until it's over. Purchasing, production, distribution undertake this all-out effort for defense—and Victory.

But Victory is only the beginning. It will bring peace, and peace will carry new national problems. The Westfield River Paper Company, Inc., believe their most effective contribution to their country—in war or peace—is the manufacture of better packaging materials for greater protection and preservation of the products of American Industry.

We will take the time—now—to assist package machinery manufacturers, production, purchasing and technical men in their efforts to improve techniques of protective packaging. We will submit samples of Glassine* paper for experimental purposes.

We are proud of the fact that in the past months we have adapted our many special Glassines* to uses and to automatic equipment heretofore considered impractical. This has resulted in the substitution of Glassine* for materials vital to other defense purposes.

WESTFIELD RIVER PAPER COMPANY, INC.

Russell, Mass.

* Moistureproof, Flavorproof, Greaseproof

Glassine: protective and decorative

by F. S. Leinbach

LASSINE is the densest, most compact form of paper. It is made of exceedingly small fibres that are "hydrated;" that is, water is driven into their cellular structure until they have become nearly gelatinous. After the paper is formed on the machine, it is supercalendered. Under the terrific pressure and heat on the hydrated cellulose, the paper becomes smooth and quite transparent. It is then glassine. If the supercalendering is omitted, the paper is neither smooth nor transparent, but the other inherent qualities are there. This is termed greaseproof paper.

Because water and grease are mutually repellent, the water in the fibres of glassine and greaseproof papers makes them highly resistant to oils, fats, and greases. The degree of resistance is usually measured by the number of seconds a paper can withstand penetration by turpentine, the first spot of failure ending the test; 1,800 seconds is considered adequate for general use.

The close-knit structure and the hydrated condition of the cellulose in these papers prevent transmission of flavors and aromas. Thus, they maintain inherent flavor and aroma within a package and exclude any that might be contaminating. They are also gasproof, particularly to hydrocarbon vapors. Untreated, however, they are neither water-proof nor moisture-vaporproof. These qualities, particularly the latter, must be attained by a surface treatment with paraffin wax, or a mixture containing some percentage of that material.

The smooth, non-porous, non-absorbent surface of glassine is ideal for wax-coating, lacquering or laminating and most of the glassine manufactured receives one of

these treatments. It is waxed to make it moisture-vaporproof, more transparent and glossy and to assure adequate heat-sealing. It is laminated to produce a paper that is softer, more transparent, and stronger than a single sheet of the same weight. The laminating agent usually is formulated to make the sheet also moisture-vaporproof. Glassine is lacquered to make it more transparent and glossy, repellent to moisture-vapor and water and to assure its making a good heat-seal. The coating also enhances the original greaseproof, gasproof and flavor-retaining properties.

Glassines are embossed for decorative purposes. The recent discovery of "deadness," or the ability of a soft glassine to hold folds, has brought out many new applications of embossing. All glassines and glassine derivatives can be printed by any of several methods, thus extending their usefulness in identification, sales appeal, and machine operation through spotting by electric eye.

In glassine the weight of 500 sheets, 24 × 36 in., is taken as "basis weight." Thus, "25# Paper" means that twenty-five pounds of paper will cover the area of this much paper, 432,000 sq. in. In single sheets a ream of paper weighs from 20 to 40 lbs.; laminated glassines may weigh from 45 to 90 lbs. The weight of a thousand sheets in any given size needed for a package is calculated by the following formula:

Length × Width × Basis Weight

432

Length and width are in inches and basis weight is in pounds. The figure obtained here multiplied by the

Glassine used for this bread wrapper has been lacquered to insure a good heat-seal. Photo Riegel
Paper Corp. 2. A laminated glassine envelope for powdered chocolate is moisture-vapor repellent
and greaseproof. Flavor and natural oil in product are retained. Photo Westfield River Paper Co., Inc.





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Before you tackle problems in WRAPS · WINDOWS · LAMINATION ·



TACKLE "transparent" problems by coming to headquarters first! You'll find pioneer experience a big help on technical points. And you'll find that Lumarith Protectoid is the transparent packaging material that stays crystal-clear. Never shrinks or wrinkles!

Lumarith Protectoid is waterproof, greaseproof, ageproof. It does not dry out or discolor. It is not affected by extremes of temperature or humidity. It cements easily and permanently, and has a perfect printing surface.

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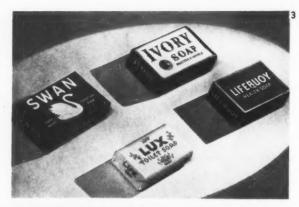
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PACKAGING CATALOG

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3. Waxed and lacquered glassine prevents lubricants used in molding soap from having alkaline effect on outer wrapper. 4. These cereal cartons have waxed glassine liners which allow reclosure by the consumer for protection of unused contents. Photos Riegel Paper Corp.

price of a pound shows the cost of a thousand packages.

There are many variations of glassine and its derivatives: for strength and economy the unbleached or lightly bleached amber types are used. There are also the opaque, pigmented whites, and the clear and colored transparencies. Each mill has standard colors which it either stocks or runs from time to time so that smaller lots will be available. Ordinarily the massive proportions of a paper machine require that special colors and grades be made in fairly large minimum quantities—usually five tons.

The properties of these papers read like the language of packaging—impermeable, greaseproof, moisture-proof, gasproof, flavor-and-aroma-retentive, mechanical operability, transparent, heat-seal, economy, etc. These are qualities so fundamental that each year glassine finds new uses. Recently products that might have suffered from the shortage of materials have found the protection they need in glassine and its derivatives. The sales of these packages vouch for their appearance as well as their protective value.

For food products containing oil, such as the shortening in crackers or biscuits, papers can be used in several ways. In one system a sheet of greaseproof paper—or for better protection, waxed glassine—is interfolded by

machinery as it sets up the carton. For further protection the carton is wrapped with a moisture-proof material.

Many such packages are made by equipment that sets up the carton and the liner independently, so that the side folds of the liner are heat-sealed for positive closure. After the package is filled, this type of liner may be closed by either the patented heat-seal closure, or the very efficient double fold closure developed by several machine companies. Unless the product needs unusual protection, a package of this type generally does not carry an outer wrap, for waxed glassines are the most moisture-vaporproof form of waxed paper. Glassine is advisable in these packages not only because it maintains the original quality of the product, but also because it allows the use of a less carefully made stock, and printing inks which might contaminate the product through another type of liner. The liner also prevents the grease of the product from staining and spoiling the appearance of the carton and helps to minimize rancidity.

The same general type has found wide acceptance in packaging cereals, brown sugar, and other products where moisture-vaporproofness and protection of flavor and aroma are of paramount importance. The waxed liner allows reclosure of the package to protect the unused portion of the contents. Greaseproof paper and glassine are often laminated to paper board to produce greaseproof carton stock of good moisture-proofness.

If the product is such that contact with wax is not desirable, a liner can be made from laminated glassine. One type of machine places the liner directly from rolls of paper and closes it with glued seams. Another inserts prefabricated bags as the carton liner. These bags can be obtained with an imprint at the top, allowing for a heat-seal closure. Several soup mixtures and dessert powders are packaged in one of these types.

For some products, among them certain pre-cooked cereals and dough mixtures, which need not be moisture-vaporproof, a plain, unwaxed glassine liner is used, with a folded closure and glued seams.

Untreated glassines are not alkali-proof, but waxed glassines are to some degree, and lacquered glassines are excellent. While no established soap manufacturers allow free alkali in their product, the lubricants used in molding the soap have an alkaline effect on the wrapper if traces of them are carried on the soap. Therefore, the soap manufacturer finds in glassine derivatives a wrapper combining protection for moisture and perfume, and long lasting appearance.

Surgical products, such as bandages and items for first aid, are hermetically sealed in glassine and then sterilized by heating at high temperature. The dense structure of this wrapper keeps the objects sterile longer.

Many types of machines are available for wrapping small items, particularly cakes, in waxed glassine, printed or plain. Spotting by electric eye is common, and the closures are heat-sealed. The same machines handle lacquered glassines well. If printing or spotting is not desired, these machines will affix a label to this type of wrapper with a special glue. Small pies and similar

products that must "breathe" are wrapped in unwaxed or uncoated glassine, often prefabricated into different types of attractively printed bags.

A striking example of the industry's ability to "tailormake" papers for specific uses is found in the economical printed and lacquered glassines widely used for packaging bread. Specifically developed to combine strength, good mechanical operating qualities, and excellent protection (flavor as well as moisture) with transparency, gloss, and brilliant coloring, these papers offer an opportunity for good individual designs.

Glassine as a wrapper, a liner, a covering for carton stocks, and often as an interleaf between layers, is of prime interest in packaging candy. Its greaseproof and flavor-retaining qualities preserve the package as well as the product.

New and interesting products are found in combinations of glassine. One manufacturer finds excellent longterm protection in packages to be shipped to distant points when he wraps them with a waxed, laminated glassine. This combination offers unusual moistureproofness, with all of the inherent qualities of waxed glassine. Lacquered laminated glassines are virtually unsurpassed for moisture-proofness. Although they are sensitive to handling, several types of equipment can handle them well, and the protection they offer well rewards the care required. Machines are available which will use rolls of heat-sealing lacquered glassines automatically to produce heat-sealed bags.

Bags, often attractively printed, are obtainable in any of the grease-proofs, glassines and glassine derivatives. Because of this wealth of available combinations with glassines, the bag maker should always be consulted on packaging problems.

The versatility of protective glassine is shown by manufacturers who use various forms of it to replace metallic foil on candy, chewing gum, or small packages requiring superior protection, and on wrapping machinery that had been designed to take advantage of the folding characteristics of foil.

These and many other examples show that when working out a new package, wherever a problem of protection arises that may involve oils and greases, flavors and aromas, loss or gain of moisture, or contamination by vapor or bacteria after packaging, where mechanical operability is a factor, or transparency, heat-seal, or attractive printing are an advantage, full consideration should be given to glassine and its derivatives, and the long experience of their manufacturers in the solving of packaging problems.

SUMMARY: PROPERTIES OF GLASSINE

DENSITY-Functional

DENSITY-Decorative

- 1) Greaseproof
- 1) Glossy
- 2) Flavor-proof
- 2) Smooth
- 3) Low permeability
- 3) Impermeable

These characteristics permit the following:

Good printing by:

- 1) Waxing, one or two sides
- 1) Letter Press
- 2) Lacquering, one or two sides
- 2) Aniline
- 3) Laminating, to same or other media 3) Gravure

All of these develop the following in a package:

- 1) High transparency
- 2) Good opacity
- 3) Thermoplastic (heat-) sealing
- 4) Extremely low permeability to:
 - a) Moisture
 - b) Oxygen
 - c) Carbon dioxide

5. First aid bandages in this tin have been hermetically sealed in individual glassine envelopes and then sterilized at high temperature. The wrapper for ice cream roll is waxed glassine. Photo Riegel Paper Corp. 6. Dry yeast is afforded protection against contamination by bacteria after packaging in these lacquered glassine envelopes. Photo Westfield River Paper Co., Inc.





PACKAGING CATALOG

AXED paper has certain inherent qualities that have enabled it to withstand the test of time as a packaging material. It is odorless and tasteless, and not affected (at ordinary temperatures) by either acids or alkalis. The wax used is not a host to either molds or yeasts. It can withstand low temperatures without becoming brittle and, with a sufficient coating of wax, it is easily and completely sealed by the application of heat. It can be so made that when wrapped directly around a product of high moisture content, the underside of the sheet will not sweat with condensed moisture. Depending on the base of the stock used and the method of waxing, it can be made either transparent or completely opaque. It folds easily so that it may wrap cartons or other products snugly, and it takes printing well. With all of these advantages it finds a ready and growing acceptance in packaging as it is one of the most economical and adaptable of wrapping materials.

Research and adaptations

Two factors point to an ever-increasing market for waxed paper. Costs of materials and labor in the manufacturing of many products have risen considerably faster than the ability to cover these increased costs in the selling price, and some types of packaging material are becoming increasingly difficult to buy. Therefore, many companies, which formerly employed more expensive methods of packaging, have found that the use of waxed

paper lets them save without cheapening the appearance or protection of their products.

Foreseeing developments that were bound to come, the larger manufacturers have maintained laboratories for years, constantly working to improve old products and to develop new ones. They have worked in recent years on so many specialized problems, often in conjunction with the manufacturers of wrapping and carton-lining machines, that many of the grades of paper now manufactured are almost "tailor-made" for a particular use. As typical examples take the following:

Soap: One of the large companies wanted a highly moisture-proof, alkali-proof wrapper for cake soap. They now use millions of pounds of an extremely moisture-proof sheet, which in reality is two light-weight sheets laminated together and coated on both sides with wax. Moreover, these wrappers are printed in rolls, which an electric eye on the wrapping machine cuts at exactly the right point to register the printed panels in the identical position on each cake.

Wrapped blank cartons: Producers of cereal, salt, biscuits, gum, and other commodities have been leaning towards the use of plain cartons with printed waxed wrappers. Paper printed in this manner, applied by an automatic wrapping machine equipped with an electric eye, gives a fine-appearing package. The printing is properly placed and the finished package looks much like a printed carton, except that it has the high finish or gloss that proper waxing can impart. Many producers

1. The use of plain cartons with printed waxed wrappers, such as these for crackers and cookies, is increasingly popular. Photo Kalamazoo Vegetable Parchment Co. 2. Addition of latex makes a waxed paper which can be heat-sealed strong enough to withstand low temperatures required for frozen foods. The straight wax seal was found inadequate for this type of bonding. Photo Riegel Paper Corp.





PACKAGING CATALOG

MILPRINT PACKAGING SCORES AGAIN

Appetite Appeal Greates Sales Appeal/ JACK FROS Create the most beautiful and outstanding package in the country"...that as the assignment given to us by this prominent fast frozen food packer. We answered the call and developed a printed Cellophane design so distinctive, and executed with such sparkle that the finished wrappers have become a sensation in the industry. Another

MIL DRINT Incorporated

MILWAUKEE PHILADELPHIA LOS ANGELES

of the packaging field.

Milprint hit in a long line of prize winning packaging achievements. "Packaged by Milprint" has truly become a symbol of success in transparent and opaque bags, wrappers, sheets, rolls and cartons . . . your assurance of sales results in practically every branch

Announcing.

IMPORTANT PACKAGING MATERIALS

TENSOLITE*

"CHEMISTRY'S MOST VERSATILE PLASTIC"

General Characteristics:

Silky to the touch and to the eye, with s-t-r-e-t-c-h built right in during the patented manufacturing process. Expands and contracts to hold merchandise firmly in place. Pliable, will not break, even when stretched over rough edges. Will not deteriorate over long periods of time, will not harden, crack or stick. Unaffected by temperature changes. Odorless, inherently moisture-proof; resistant to perspiration, oil, grease, most acids, mold. Flame will melt it. It will not burn. Unlimited color range.

Tremendous tensile strength in every inch of Tensolite.

Forms:

TENSYLON yarns and cords.

TENSOLITE bristles, wires, lacings, strips, trim, ribbon, lamé and decorative materials.

Applications:

TENSYLON cords, solid, or with centers of cotton, rayon or other materials, are the ideal solution for all packaging problems, particularly where the special qualifications of these unusual materials are required. TENSYLON yarns have unlimited weaving, braiding and looming possibilities.

TENSOLITE Lamé and crushed flat yarns (called Crille): For woven materials and of great interest to ribbon manufacturers, where lamé, particularly in gold and silver, is desired.

TENSOLITE ribbons—perfect for every tying purpose. Knot quickly and stay tied. Every bit as smooth as silk—in fact, smoother. New finishes. A variety of color combinations that are integral with the ribbon itself.

TENSOLITE decorative ties and materials are available in widths up to 24"—a material that is gossamer-fine yet tough. Wide enough to be used in bolts for decorating of windows, as a package wrap, etc. Crushed together it makes a marvellous iridescent tie. Makes up into decorative bows. Often used as soft, colorful cushion for fragile merchandise.

A NOTE . . .

will bring you samples and prices—or send us your package and we'll return it

"Tied with Tensolite."

The TENSOLITE CORPORATION

North Tarrytown, New York and its Subsidiary for manufacture of cords and yarns

THE TENSYLON CORPORATION Eldred, New York

*processed from Pliofilm

*T.M. The Goodyear Tire & Rubber Co.

who formerly wrapped printed cartons with transparent sheets have switched to this type of package because fine printing on good opaque stock, coated with a high finish wax, makes a wrapper that is not only very attractive but also less expensive. Another advantage is that if many different printed designs are used, the total inventory—both tonnage and dollars—of printed wraps and plain cartons carried may be less than in cases where large quantities of printed cartons must be kept on hand.

A recent innovation is a sheet printed with electric eye registration, waxed on one side and strictly dry on the other. This was created to function perfectly on a tight-wrap machine, which applied a thin coating of glue on the under (dry) side of the wrapper and then placed this around the carton, glued at all points so that carton and wrapper are one. This works very well when feeding from rolls, but many of the tight-wrap machines in use today feed from a stack of printed sheets, such as labels, and are not adaptable to the use of papers waxed on one side.

If moisture-proofness was important, this protection was formerly obtained by a waxed liner, asphaltum laminated board, or a transparent outside moisture-proof sheet. But because wax as applied to paper is so adaptable, it was found practicable to laminate two sheets of opaque paper with wax to which a material has been added for greater bonding strength, leaving both outer sides completely dry. Thus one side of the label can be printed in the regular manner, the other side can be glued to the carton, and the laminating material offers ample protection against moisture. This type of sheet will probably become increasingly popular, especially with those concerns now using foil labels with tightwrap machines.

Butter: Some creameries have changed the type of waxed paper used on their automatic butter-wrapping machines. These machines first wrap the butter in

parchment which can be stripped off easily without any butter clinging to it. Many creameries add a dry wax wrapper, which gives partial protection against loss of weight through evaporation. Surface-coated waxed sheets, though they contain no more wax than the impregnated or dry sheets, are considerably more resistant to moisture. For this reason, several of the larger creameries which formerly used dry waxed paper now use a sheet with a surface coating, thereby considerably increasing the protection offered.

Chewing gum: Much of the stick gum, formerly individually wrapped in foil, is now wrapped in specially made waxed papers, thus releasing large quantities of aluminum and other metals which are needed for direct use in war industries.

These examples adequately demonstrate not only that waxed paper stands on its own feet as a packaging material, but also that through complete cooperation among refiners and manufacturers of both waxed paper and machines, it is readily adaptable to an even greater diversity of practical uses.

Frozen foods: By adding small amounts of certain other substances to wax, a paper for a particular use may be improved. For example, since the addition of latex increases the strength of a heat-seal, it is especially good in waxed papers for the frozen food industry, where the bond of a straight wax seal was found inadequate for the extreme low temperatures at which it is necessary to hold the products.

Meats: At ordinary cold storage temperatures, a straight wax coating does everything asked of it. Several years ago waxed liners began to replace parchment in poultry cases because they offered better protection against oxidation and "freezer burn."

For many years the meat-packing industry has used large amounts of waxed paper. The advent of the cold storage locker service marked the beginning of one of the

3. Sheets—waxed on one side and dry on the other—for these tight wraps were printed with electric eye registration. Photo Nashua Gummed and Coated Paper Co. 4. A special waxed paper wraps the sticks of gum in this package, thereby replacing needed metal foils. Photo Riegel Paper Corp.





PACKAGING CATALOG

5. Bread is probably more frequently wrapped in waxed paper than any other food. Electric eye registration of the printing on all these wraps places design accurately on each one of the panels. Photo The Menasha Products Co.



most rapidly mushrooming new businesses in the country today. Fresh-killed and cut meats can be kept satisfactorily for many months at below-freezing temperatures, thanks to the development of specially made waxed papers. A satisfactory locker paper must be strong, wet or dry, blood-proof, and able to withstand extremely low temperatures. It must also be moisture-proof yet dry on one side so that the butcher may stamp the date and kind of meat on it. All of these qualities are available today in many waxed papers.

Candy: While the candy trade has for years been using various grades of waxed papers, in recent years the manufacturers of candy bars especially have turned more and more to waxed transparent glassines, opaque glassines, and opaque sulphites, some coated with a combination of high-melting-point waxes. This trend may become more marked as certain foil wrappings become scarcer. In addition to satisfactorily replacing foil with an attractive printed wrapper, the savings in cost of the wrapper will help to make up for the increased cost of the other materials and the labor that goes into the manufacturing of the candy bar itself.

For a great many years waxed paper has been used as a wrapper for candy kisses, where a sheet with special twisting qualities is required. Twisting qualities may be imparted to sheets of other materials by the addition of controlled amounts of a plasticizer. Through recent developments in this art, transparent waxed glassines are now used quite generally as twist wrappings for candy. Bread: For many years one of the principal uses of waxed papers has been as a wrapper for bread. The last ten years have seen many improvements in this item. First came the opaque sheet, which because of its greater whiteness made for better and more attractive printing. Better inexpensive grades of transparent wrappers were developed which because, of super-calendering of the stock and automatic control of the waxing, offer an exceptional degree of protection to the bread.

A still later development in bread wrappers is the use of an electric eye for registration of the printing which makes the wrapping machine cut and apply a sheet of identical size and design to every loaf. Bread so wrapped is distinguishable by the fact that the printed panels on

sides and top are accurately registered on each loaf. **Special bags:** Waxed papers are sold not only in sheets and rolls, but certain grades are also made into bags or envelopes. Bags of dry waxed paper are often used on rye bread or Vienna bread where, because a hard crust is desirable, moisture protection is not needed.

For products that need considerable protection, papers with one side—or preferably both sides—waxed are used. More often than not these bags waxed on two sides have a glassine base, so that the finished bag is highly moisture-proof, grease-proof, and transparent. Potato chips, popcorn, and similar products which must be kept dry are often packaged this way. Envelopes of laminated glassine or sulphite are used extensively for packaging flavoring powders.

Research is continuous

The variety of other accepted uses is legion, including a moisture-proof protection for ball bearings and other fine machine parts, as a protection for the finishes on fine furniture in shipment, as a wrap for spark plugs, as a liner or outside wrap for cartons, etc. It is used as a protective material for practically everything from dynamite to farm machinery.

The industry for years has been continually experimenting and searching for new and better coated papers for the multitude of new uses that continually spring up. In general it may be said that no other single coating material combines the properties of moisture protection, flexibility, heat sealing, high finish, low cost and efficiency so well as wax of the right quality applied to the right type of paper.

Because of the variety of basic sheets to which wax—or wax together with resins, latex, or other materials—may be applied, and because of the various ways these may be applied, the possibilities for new uses, and new waxed papers, are almost unlimited. The end is nowhere in sight.

Before the war, much of our pulp and paraffin came from abroad, but fortunately we have sufficient quantities of both materials available, and domestic production is also sufficient for all our needs.

PACKAGING CATALOG

Vegetable parchments

by Glenn Stewart

from unsized sheets prepared from rag or pure chemical wood pulp. The original raw stock, which the paper maker calls waterleaf, is passed through a bath of sulphuric acid. The acid is washed off the paper with pure water and the paper is then dried by passing it over steam-filled rolls. The sulphuric acid dissolves the outer surfaces of the paper fibres into a sort of jelly, thus forming what the chemist would call an amyloid. When the action of the acid is stopped by the rinsing process, the interstices or holes of the paper are filled with this jelly. The paper has thus been changed from a sheet that was formerly instantly soluble in water into one that will not go to pieces in water.

When this treatment was discovered, about the middle of the last century, the originators were hard pressed for a name for this astonishing new paper. It looked so much like animal parchment, especially when wet, that they gave it the name "parchment," at that time and, since all paper was being made from rag stock of vegetable origin, they prefixed the word vegetable. To-



day the paper is usually called "genuine vegetable parchment" to distinguish it from imitation papers that look like it, but do not have quite the same properties as the original article.

Adaptability to various conditions

The quickest and best way to test vegetable parchment is to soak it in water. It immediately becomes so soft and pliant as to appear even stronger wet than dry; but, whether the water is cold or boiling, it will not destroy the sheet or cause it to go to pieces. Vegetable parchment is likewise grease-proof or grease-resistant. Fats and oils, whether hot or cold, have no more effect on it than water, and some grades of parchment will permit no penetration whatever. These two inherent qualities—insolubility and grease-proofness—plus the fact that is is odorless and tasteless, account for the major uses of the paper in industries with problems of protection from moisture and grease.

The natural color of genuine vegetable parchment is white, but it is also available in colors. There is no problem of free fibre, lint, or fuzz with genuine parchment; consequently, parchment strips clean from any moist or sticky surface.

Parchment is not air-proof. Both air and moisture can penetrate it to a degree which will permit the contents of the package to "breathe." This quality is particularly helpful in the case of such foods as fresh vegetables, certain meats, etc.

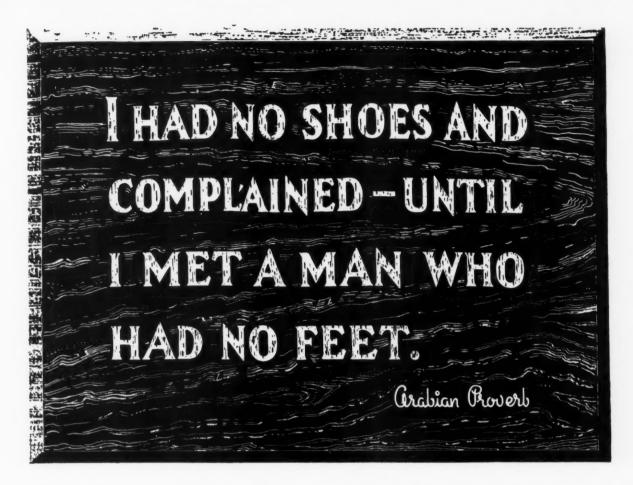
Special inks are used in the printing of genuine vegetable parchment, since the printing must not offset when

1. Parchment liner for lettuce crate. 2. Snow-white parchment has been avenized to help protect this ham against rancidity. 3. Parchment printed band, folded under at bottom, is used as a wrap to keep celery fresh.





16 PACKAGING CATALOG



Another good thought passed on by the makers of

KVP

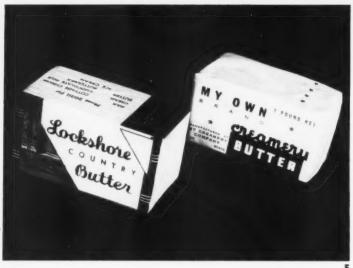
FOOD PROTECTION PAPERS



KALAMAZOO VEGETABLE PARCHMENT COMPANY

PACKAGING CATALOG







4. Parchment cover for ice cream container strips clean from product. 5. Inks used on butter wrappers, such as these, must be able to withstand boiling. 6. Parchment gasket on milk can between can and lid prevents contamination. All photos Kalamazoo Vegetable Parchment Co.

used on greasy, wet, or briny foods. The inks must stand the boiling test, since in the dairy industry, butter wrappers and liners are boiled before use. Most wrappers are printed, and a wide choice of designs in color in both letterpress and offset, are available.

The weights of genuine vegetable parchment vary from 20 to 60 lbs., on the basis of 24 in. × 36 in.—500. In addition to colored parchment, waxed, coated, embossed, and crinkled forms are common. Treatments with glycerine and other substances are also used to give certain desired properties.

Special uses

Meat: In the meat-packing industry (including poultry), where it is essential that protective wrappings are attractive, resistant to grease, and not disintegrated in contact with meat juices, snow-white vegetable parchment has been widely adopted. A special treatment, avenizing, which helps to prevent rancidity, is used on wrappers for sliced bacon, lard, and other fatty products. To prevent meats from sticking to metal containers, tins for spiced ham and luncheon meats are lined with parchment. Crinkled vegetable parchment—i.e., a sheet which has been creped or crinkled to increase its

strength—is used in packing houses to line containers for boiled ham and for other purposes. Poultry packers use vegetable parchment—frequently printed—as a lining for crates which, when turned back over the edges of the box, forms an attractive display. Other uses include liners and covers for boxes and barrels, wrappers for tamales. Milk products: In the dairy industry, vegetable parchment is widely used as a wrapping for butter because of its freedom from taste and odors, and its high strength and grease-proofness while wet. Most containers for lard—cartons, pails, drums, and tubs—are lined with parchment. Vegetable shortenings require the same protection.

Cans for milk and cream use parchment gaskets between the can and the lid to prevent contamination from various sources. Parchment hoods for milk bottles are common. Many types of cheese and bricks of ice cream are wrapped in parchment. In the case of the latter product, parchment offers the advantage of stripping clean from the ice cream, leaving no paper shreds. Garden produce: Fruit and vegetable shippers use parchment as liners for boxes and crates or as individual wraps or bands for lettuce, carrots, celery, broccoli, spinach, sweet corn, etc. Sometimes individual ears of sweet corn are put up in artificial husks, consisting of a parchment wrapper in which the corn is to be cooked.

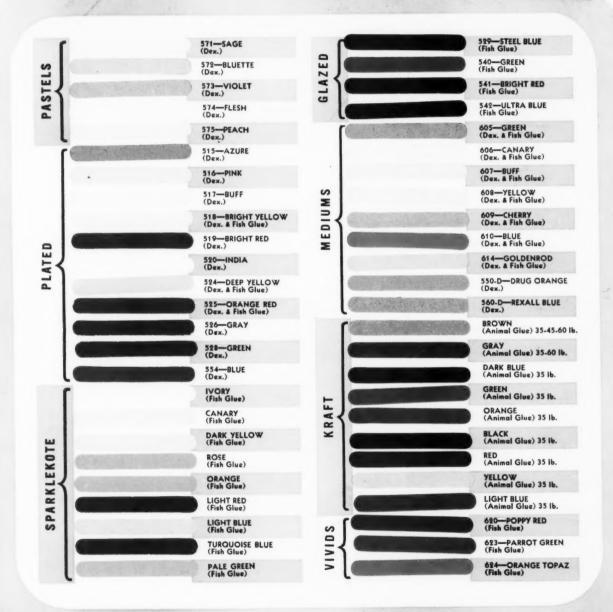
Fish: The fish industry uses parchment for fresh fillets, and the same sheet, waxed for frozen fillets. The wax makes it easier to strip the sheet from the frozen product. A specially treated sheet of parchment is used as a lining by canners of shrimp, lobsters, crabs, etc., to prevent blackening of the contents from contact with the can.

Frosted foods: In the frosted foods industry, vegetable parchments, both plain and coated with paraffin, are used for fish fillets, fruits, and vegetables. For liquid or semi-liquid packs the paper is first fabricated into a bag, which is inserted into a carton and filled. The top is then folded over and heat-sealed.

Miscellaneous uses of genuine vegetable parchment include wrappings for grease-packed metal items like ball bearings; pads for permanent waving; wrappers and liners for oleomargarine; slap sheets and wrappers for the retail meat dealer or grocer; and a special grade of parchment for greeting cards.



50 McLaurin-Jones Colored Gummed Papers give COLOR PERSONALITY to your Labels and Seals!



MCLAURIN-JONES COMPANY

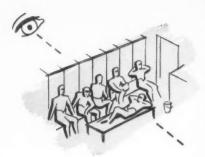
BROOKFIELD, MASS.

OFFICES IN NEW YORK, CHICAGO and LOS ANGELES

COLOR HAS

OVER

COLOR INFLUENCES PEOPLE



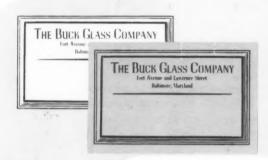
Colored papers can work for advertising as effectively as the color method worked for a well-known football team. The coach painted one dressing room blue, the other red. At the half, the players were taken into the blue room for a few minutes of rest. The coach then brought them into the red room for his pep talk before sending them back into the field.

You may say that it was the talk and not the color scheme that put fight into the players. But you can't sidestep the fact that this fight talk was far more stimulating in the red room than it would have been against the cool restful background in the blue room.



IT'S THE SPOT OF COLOR

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Transparent wrapping sheeting

by Harold A. Levey

HILE most of us can recall seeing thin gelatin sheeting on packages as far back as we can remember, it was only until a year or so before the first World War that we saw a completely transparent form of cellulose sheeting. The demand for transparent wrapping parallels that for the glass container in accordance with "See what you are buying." It offers decorative possibilities not within the scope of the glass container. Its adaptability, due to its extreme flexibility, makes this possible. Further, it may be colored, embossed, printed upon and satisfactorily and quickly bonded together.

Cellulose and cellulose derivatives

Viscose: The first type of transparent cellulose sheeting which met with ready acceptance as a general wrapping was composed of viscose or regenerated cellulose. This material is completely transparent, colorless as made, but obtainable also in colors and in embossed designs. It is slow burning, slightly hygroscopic, and it is affected by atmospheric conditions, particularly humidity. This non-moisture-proof sheeting cannot be used as a wrapping in direct contact with food products possessing a high moisture content, but it is used extensively as an outer wrapping for nearly every other commodity that can be accommodated within the dimensions of its standard sheet, price and margin of profit permitting. Its relatively low price, together with its ease of selling and workability on automatic equipment, has extended the use of it to almost limitless fields.

Cellulose acetate: A relatively new type of sheeting on the American market as a general wrapping is composed of cellulose acetate. It possesses an unusually high degree of clarity, brilliancy, and surface sheen. It is practically unaffected by atmospheric conditions and humidity. It can be obtained in colors, is readily printed upon and embossed, as well as quickly cemented. Its properties are so varied that the same material can be made into sheeting that is strikingly rigid or as flexible as rubber sheeting, and these properties are constant through wide changes in humidity and temperature. Its values for transmission of moisture can be controlled within definite limits, which makes it readily applicable to almost any type of wrapping, including direct contact with food products. It can be effectively used as a covering for the windows of envelopes, cartons and display containers. Because it is relatively inert to atmospheric changes, as soon as satisfactory adhesives were developed, it was used as the transparent layer in laminating over all types of printed matter, paper and fibreboard stocks.

Ethylcellulose: A new form of sheeting which has recently become available is made of ethylcellulose, an ester of cellulose and ethyl alcohol. It is stable to alka-

lies, heat and light. Its high flexibility is inherent in the material and not obtained through the use of any added substance. It is a rough, clear, glossy sheet which transmits up to 95 per cent of visible as well as some ultraviolet light. It remains strong and flexible and does not shrink or curl on aging, exposure to light, or wide variations in temperature and humidity. It is readily printed upon or embossed and easily cemented. Some types are moisture-proof and heat-sealing. The standard material is moderately resistant to greases and vegetable oils, while special types are available which are not affected by these products, nor by naphthas and mineral Ethylcellulose sheeting is an excellent material for window packages and display containers, and it can be used in direct contact with foodstuffs. Although it will undoubtedly find its place as a general wrapping material, its combination of properties indicates more immediate application to needs at present not satisfactorily filled by other sheetings. Although its prevailing price is higher than that of the other types, its manner of manufacture clearly promises the possibility of its soon competing on a price basis with the other forms.

Modifications of viscose

To overcome some of the shortcomings of viscose, more particularly to make it moisture-proof, this type of cellulose sheeting is coated with a thin film of nitrocellulose lacquer containing resins, plasticizers and waxes. The resulting sheet is essentially proof against moisture, oil and grease, stronger, and less inflammable. While it is not completely water-proof, it is highly resistant to the transmission or penetration of moisture (which should be the interpretation of the term moisture-proof as used in this article). This treatment reduces its sensitivity to changes in humidity and increases its resistance to the attack of insects and the growth of mold.

Because of its resistance to the transmission of moisture, this type of sheeting is invariably used where the wrapping must come into direct contact with food products, and especially when it is desired that the original moisture content of the food (or similar commodity) be retained for a fairly long time. This applies particularly to such materials as confectionery, baked goods, and tobacco products, whose moisture content must not be lost, and to crackers, candies, and other products which must not take up moisture. Even though this type of wrapping costs one-third more than the uncoated sheeting, the volume used of this coated sheeting is about three times that of the uncoated. Obviously, its resistance to moisture passing either in or out, appears to compensate amply for any increase in cost.

All of the above types of sheeting are practically odorless and tasteless and can be formed into an almost gastight enclosure. Certain of these types are sufficiently thermoplastic to make a satisfactory "heat-seal" by the application of a moderate amount of heat and pressure. These composite sheetings make a wrapping which will retain nearly all of the original odor and flavor of the materials contained therein.

Light-proof wrapping

A new transparent sheeting on the market possesses the the property of filtering the ultraviolet rays out of daylight. These rays are largely responsible for the spoilage of many foods and cosmetics which become rancid or lose their odor, flavor or color when exposed to natural light. This form of sheeting is clear and transparent and is obtainable as standard viscose sheeting, as well as the coated or moisture-proof forms. Where greater opacity to these detrimental rays is desired, all types of sheeting are available in an amber shade, which filters out the ultraviolet light and preserves the wrapped goods for a longer period than the colorless sheeting does.

Resin sheeting

There is now available sheeting, made wholly from polyvinyl ester resins, which possesses many of the desirable properties of the cellulosic types. This is especially valuable for its heat-sealing characteristics and for the ease with which it can be laminated to paper and fabrics. Polystyrene is also being made into thin sheeting, and the acrylic ester resins and vinyl acetals are being developed. The basic cost of these products and the engineering problems involved in fabricating them into sheeting have retarded their advancement in this field of application. Another modified vinyl sheeting, developed by B. F. Goodrich and Co., is already well established.

These resins in solution form are also used both to coat and to impregnate various types of paper stock thereby substantially improving them as wrappings. As a coating they produce a very high surface sheen, and improve the brilliancy of any printed matter they may cover. As an impregnating material for translucent papers such as the glassines, tissues and vegetable parchments, they are translucent almost to transparency, but there is no paper in modified or treated form which could be considered completely transparent.*

Aside from this property of transparency, many of these resin-impregnated sheetings possess most of the other characteristics of the all-resin sheeting, and other forms of transparent sheeting, such as impermeability to moisture, grease-proofness, ability to form a dust- and air-tight package, immunity from attack by insects and growth of molds, good heat-sealing, etc.

Recent innovations in transparent sheeting are composed of the chloride and the hydrochloride derivatives of rubber. Another manufacturer uses standard sheet rubber fabricated into bags or containers in which dressed meats, poultry, etc., are packed under pressures that are different inside and outside. These new forms of sheeting are completely transparent and are unusually impermeable to moisture. They are slightly plastic, but not elastic. Their characteristic difference from the cellulosic type of transparent sheeting is that while their initial resistance to tear is less they offer greater resistance to a tear once started.

Still another variety of sheeting is an exceedingly plastic composition of rubber and wax which can be permanently stretched to several times its original dimensions. This material (called *Parafilm*) is translucent, but otherwise it has several properties in common with the other types described.

Modern trends

Modern trends have been decidedly toward the completely transparent wrapping and of these there is decided preference for the moisture-proof types, notwithstanding their substantially higher cost. This indicates clearly that the desideratum is to make the wrapped object completely visible, as well as to have it reach the consumer in practically the same condition as when it left the manufacturer. Such conditions demand a form of sheeting which shall itself be invisible and at the same time be highly protective. It must be water-, oil-, and grease-proof, dust- and air-tight, highly resistant to moisture, strong and flexible-and be able to hold these properties over an appreciable length of time. It must be available in colors, receptive to printing and embossing, easily and quickly cemented, and readily adapted to automatic or semi-automatic packaging machinery.

While the moisture-proof viscose sheeting has most of these desirable properties, it also has many shortcomings. It is a laminated composite sheet, with the moisture-proof surface coating .0001 in. thick. While it is resistant to the transmission of moisture, this type of sheeting is not water-proof; on immersion, or after sufficiently long contact with water, the thin protective coating becomes detached, thus making the material ineffective for the purpose desired.

Relief effects are now obtained by embossing and printing, which in many cases have eliminated at least one wrapping and resulted in a package of more attractive design and greater utility. Owing to the complete transparency of this sheeting, only the printing is visible and it appears to be a part of the object wrapped.

Gummed transparent tapes, cut from both clear and colored sheeting, are now available. They make a secure bond to almost any type of surface, and unlike other adhesives they do not require moistening. The bond is effected by the application of only a very slight amount of heat and/or pressure; hence these are usually called pressure sensitive tapes. They can also be supplied with

Rubber derivative sheeting

^{*} Transparency means a degree of light transmission completely free from the diffusion which is characteristic of such substances as glass, water or the like. While many forms of so-called transparent sheeting appear to be quite transparent when placed in immediate contact with a printed surface this same sheeting when removed a relatively short distance from the same surface will so diffuse the light that the printed matter and other configurations lose their sharp outlines and appear fogged. While real transparency has been an objective of many paper manufacturers, particularly the glassine producers, for several decades past, the transparent sheetings described in this article still hold the monopoly as the only completely transparent forms of flexible sheeting.

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printed and embossed designs. Printed and cut-toshape seals and closures are now fabricated which effectively serve both to seal and label a package and to designate the strategic point at which the wrapping might be most readily opened. These clear and colored transparent gummed tapes are used on many manually wrapped packages as a time saver, and they make a very striking wrapping. The clear, colorless, transparent, gummed tape is by far the best product for making invisible repairs on torn paper, fabric, or other materials.

Opening devices

As transparent sheeting is unusually strong for its thickness, packages so wrapped and sealed can be opened only with difficulty. To overcome this difficulty some manufacturers leave a part of one flap turned up at the closure; others enclose a small narrow strip or ribbon of thicker sheeting, in another color, which projects at the joint in the wrapping.

Transparent cellulose sheeting, both clear and colored, can be used as binding tape if it is folded into a tube with a lapped joint and then pressed flat. Some types have an inserted core of another material such as metallic foil, paper, or fabric, bearing printing that shows through the transparency.

Storage of transparent sheeting

The viscose or cellophane sheetings are supplied by their manufacturers with a predetermined moisture content. This type of sheeting is extremely sensitive to variations in humidity. When the humidity is high it absorbs moisture, thus increasing its water content, and when the humidity is low the sheeting loses an excessive amount of moisture, thus changing its physical characteristics. Under either of these extreme conditions the material does not work so well on automatic equipment as it does when its moisture content is normal. Therefore it should not be stored or handled under extreme conditions of heat, cold, dampness or dryness. The optimum conditions temperature for storage are: 70° F., humidity, 50 per cent.

Purchasers of converted sheets, bags, and other forms of cellophane have occasionally experienced difficulties with shipments received during or immediately after extremely cold spells. Such shipments, having been subjected to transit during sub-freezing weather, should be allowed at least 24 to 48 hours to reach room temperature before being used.

Unconverted sheet or roll stock is usually safely packed to be in prime condition for the maximum length of time. Original packages should not be opened until required for use. When entire packages or rolls are not to be consumed immediately after opening, the unused portions of the material should be carefully replaced in their original wrappers for overnight or any longer period of storage.

Rolls should be stored in their original shipping containers until ready for use. Most manufacturers recommend hanging them horizontally. Sheets should be stacked, but never too high. One manufacturer recom-

mends ten packages of 1,000 sheets as the maximum height of each stack and advises smaller stacks in humid weather. Conforming to this particular suggestion will prevent sheets from adhering to one another.

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The moisture-proof types of cellophane are not so readily affected by climatic changes as are the non-moisture-proof varieties; nevertheless, the precautions just described apply also in a lesser degree to moisture-proof sheeting. One supplier recommends the purchase and storage of no more than a 60-day supply of material, because fresh stock always can be obtained promptly.

Acetate sheetings in rolls should be stored by hanging the rolls, suitably wrapped, horizontally in a room at 70° F. and 50 per cent humidity, away from direct sunlight. The temperature should never exceed 90° F. and the humidity should never be higher than 50 per cent. Low temperature and humidity have no serious deleterious effect, but if the material is stored at or below freezing temperatures it may require conditioning before fabricating.

Acetate sheets should be stored in their original wraps and laid flat on smooth shelves under atmospheric conditions similar to those described for the rolls. Stacks should not be more than 12 in. high.

Since rubber-derivative sheetings are virtually unaffected by dryness or dampness, special precautions on temperature and humidity are not necessary. Conditions in the average packaging plant are within the wide range of conditions which are not detrimental to such rubber-derivative materials.

Shielding from sunlight

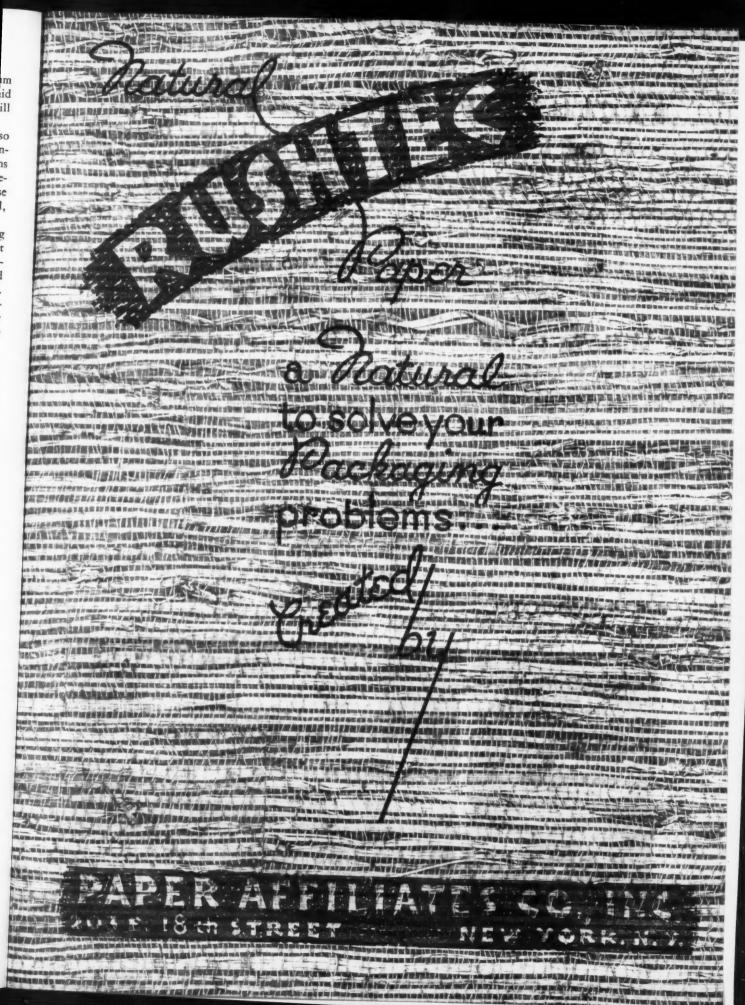
Materials that are affected by strong sunlight should be shielded from the ultraviolet rays of the sun either by storing in the dark or wrapping the rolls or bundles in opaque paper. Rolls should be stored on end, and inverted every two or three months so that there is no tendency to bend at either end. No particular precautions as to circulation of air are required.

The absorption of moisture by cellulose acetate sheetings is low and change of volume, under storage conditions, is therefore very small. The plasticizers in these materials are neither moisture-soluble nor volatile, and they do not bleed.

Storage of foils

The foils usually employed for the manufacture of rigid fabricated or drawn shapes have a very high softening point and can therefore be subjected to storage temperatures as high as 145–150° F. Extreme changes in temperature should be avoided during any processing such as multi-color priming, although the coefficient of thermal expansion is not generally excessive.

Foil which has been subjected to extreme dryness will expand about $^{1}/_{4}$ of 1 per cent (0.0025 in. each inch) if brought into contact with humid air, but this expansion is not experienced under normal conditions.



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Laminating and combining

by Clarence J. Voneman

LMOST every day we hear of new packaging problems being solved, or old packages being improved, by combining a transparent film with some other standard material, to form a single substance. The results obtained are superior because in practically every combination the deficiencies of the standard material can be overcome by the improved physical qualities and appearance of the transparent film, yet in many cases no change in equipment or special handling is necessary.

Cellophane, cellulose acetate, and rubber hydrochloride are the films most commonly used, although some of the newer transparent plastics are being utilized with increasing success. These films are usually combined with paper, of varying weights from light label stock to heavy board, but they are also combined with one another and with foil. Each type of lamination is designed to do some specific job.

All types of packages are improved

There is hardly any branch of the packaging industry that has not taken advantage of one or more of these combinations. In everything from small labels to intricate individual units, either improved appearance or superior physical qualities have resulted. The transparent film can be combined with the stock either before or after it has been printed.

One large pharmaceutical house uses cellulose acetate laminated labels on dispensing bottles to assure that they will be clean and readable as long as the bottles are on the dealer's shelf. A cosmetic manufacturer uses a similar lamination over foil labels to protect the printing and to assure himself that his package is always as attractive as when it leaves the retailer's store. In innumerable similar applications, a simple, short interruption during the production of the labels provides an opportunity to take advantage of the improved appearance and a scuff-proof surface. In some respects, also, the lamination of labels has served as a protection against the counterfeiting of "bootlegging" of particular labels or containers.

Inherent film qualities transferred to packages

Many other points of superiority are readily available to every user of laminated transparent film. High resistance to penetration of moisture is inherent in all of these films, which permits their being wiped clean by a dry or damp cloth. Likewise, this film protects printing because it resists contact with grease, dust, grit, alcohol,

Lamination improves appearance of wide variety of packages. Folding carton for pipe was die-cut, and film laminated to stock formed window over aperture. Photo Shellmar Products Co.
 Foil and acetate combined make these individual coffee units convenient to handle, because they are measured to portions and provide maximum protection. Photo The Dobeckmun Co.





PACKAGING CATALOG





3. Liners of transparent film combined with foil protect these extremely hygroscopic chemicals. 4. Opening tape produced by laminating two sheets of film with transparent bonding agent. Photos The Dobeckmun Co.

and the many other substances to which any package may be subjected in normal usage.

Blacks, whites, and colors are intensified and given brilliance and highlights which cannot be obtained in any other way. These assets give a package an added sales punch, and make it stand out in contrast to competitive packages on the dealer's shelf.

Improved sales with set-up and folding boxes

These same advantages are available in set-up or folding boxes. In the former, the printed sheets are forwarded to the laminator, as they come from the press, and when returned they are the same size, ready for the necessary cutting and finishing of the box. Loose wraps and tight wraps alike are handled in the regular manner, and on standard equipment. The only possible change might be in the adhesive. If the laminated side of the stock is to be bonded to itself or to an unlaminated surface, adhesives of the type of commercial latex are suggested.

The qualities endowed by lamination and the protection it affords eliminate any necessity of repackaging or selling at a discount, because of shelf wear.

In folding cartons the results and procedure are much the same. Even the lower grades of patent coated board, when laminated with transparent film, provide excellent protection and are much improved in appearance. Variations are possible by strip lamination, that is, covering only a portion of the carton, and leaving the glue flap, or some part of the surface that does not show, uncovered. This keeps the cost down yet does not in any way detract from the sales power of the package. Another advantage, important in these times, is the conservation of stock. The additional stiffness imparted to the board through lamination makes it possible to use lighter weights without sacrificing physical qualities.

Lamination over windows provides an ingenious and effective folding carton. The window is die-cut in the press sheet before lamination and the film as it is laminated to the carton stock forms a window over the aperture. Then the blanks are cut out and the carton formed in the usual way. It is also possible to eliminate one die-cutting operation by putting a regular window into the carton, from the back on a regular window machine. This latter method provides a stronger window since the the film used in regular lamination is the thinnest available and thus very fragile, particularly after being subjected to the heat of lamination. On a window machine the weight of film can be varied to meet the strength required by the size of the window. For this reason, and also because many manufacturers have the equipment available, this method is preferred. The film can be printed on the reverse side before being laminated to the board, or plain film can be attached to the printed board.

Another variation in either set-up or folding cartons is the use of color in the bonding agent, which produces a smooth, extremely brilliant color in the finished package. This color is opaque, however, and must therefore be used on unprinted stock, although printing on the acetate by letterpress is very common and, by the use of surface-drying ink, very satisfactory. Since color can be applied to either light- or heavy-weight stock, this permits the use of special individual colors or combinations on relatively short runs. It is generally applied to stocks in roll form.

This latter variation, as well as reverse-printed film, laminated to light-weight papers, makes an ideal wrapping for gifts or set-up gift boxes.

Improvement in individual units

Transparent film, laminated to itself or to foil, has proved to be an excellent material for packages of individual units—doses, capsules, wafers, etc. By virtue of the various qualities of the film, they can be made opaque and moisture-proof, and heat-sealed. These packages can be handled on automatic machines designed for the purpose. Either the film or foil can be printed for these individual units as occasion demands, thus making possible a complete unit, with fine appearance and high sales value.

These and many other packages are reaping the benefits of lamination with transparent film. Through careful research and studies of the market, an exceptionally large number of types of packages have been developed and are being developed daily in many industries. The protection, appearance, and convenience afforded by lamination will undoubtedly lead to extended use of this process, and it will long continue to be a vital factor in solving packaging problems.



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Tarnish resistant papers

N anti-tarnish paper, whether in tissue weights or heavier weights such as parchment, is one that is made wholly from materials that do not contain ingredients, chemical or otherwise, that will cause tarnish on silverware or other highly polished metal articles. From this it will be seen that an anti-tarnish paper, as a wrapper, does not offer protection from tarnish, it merely is a wrapper that itself will not cause tarnish.

One of the fallacies, long held by the public to be a truth, is that black tissue, for instance, is a suitable wrapper for silverware. As a matter of fact, the dyestuff used in making black paper has a very decided tarnishing effect on polished metals and consequently black tissue is a very unsuitable material for wrapping. Practically all anti-tarnish papers are white, although in late years certain light tints have been developed from dyestuff materials that do not contain tarnish impurities.

Sulphur, by far, is the most common and the most harmful of tarnish impurities. It is present in the atmosphere in varying degrees. The atmosphere around a city such as Pittsburgh, for instance, contains much more sulphur and sulphur fumes than would be found in the atmosphere of a rural community.

Specifications

The United States Bureau of Standards specifies that anti-tarnish tissues for wrapping silverware must contain no more than .0008 per cent sulphur. This has likewise been established, by one of the large silver companies, as a maximum for any paper that actually touches silver. On paper, on the outside of boxes, which does not touch the silver, the percentage is .0016.

Parchment is made from wood pulp which is manufactured by the so-called sulphite process and the paper itself is parchmentized by treating with sulphuric acid. Most parchment papers do not have satisfactory anti-tarnish qualities, butsome of the more expensive parchments have been washed and rewashed to remove all traces of free sulphur and can be used with more or less safety in silver wrapping. Bags made of parchment paper are usually lined with transparent cellulose to prevent a tarnishing action of the parchment itself. This transparent cellulose is practically air-tight, which prevents tarnishing impurities in the parchment from reaching the silverware and is also in itself an anti-tarnish material.

Types

Anti-tarnish tissues are of two types, white and kraft. White anti-tarnish tissue, or silver tissue as it is sometimes called, is specially treated No. 1 grade. It contains a higher grade pulp and must be handled more carefully all through the manufacturing process than regular No. 1 white tissue. Every trace of sulphur must be elimi-

nated. Consequently, it is more expensive than the ordinary No. 1 grade.

Most kraft tissue will pass this test, too, for the reason that kraft pulp is made by a different process than sulphite pulp used in manufacturing white tissues—a process which, by its very nature, eliminates the possibility of sulphur being present. Hence its use is generally confined to the wrapping of hardware items, machinery parts, etc., while white silver tissue is used for wrapping higher quality articles such as those made of silver, copper, brass, etc.

Cotton linings

A new type of cotton-lined paper, available in the form of bags or cut-to-size sheets, is also coming into use where anti-tarnish qualities are desirable. The soft cotton lining serves to absorb shipping shocks, while the paper backing makes for easy handling and permits fabrication into bags and rolls.

Flannels of anti-tarnish type are also being used as wraps and as bags of round bottom, square bottom, draw string and other types.

Rust prevention

Closely related to tarnish prevention is the problem of rust prevention, a problem affecting exporters and those who ship by water in particular, but affecting all manufacturers of metal packaged products to a degree.

A number of water-proof papers are available, consisting essentially of two sheets of kraft paper of various weights with a layer of water-proof asphalting between. One or both sheets of paper may be creped to provide for stretching in one or both directions. Water-proof papers can also be obtained with a reinforcement of cotton or jute cords imbedded in the asphalt between the two sheets of paper.

These papers are extensively used for wrapping textiles, tires and metal products. Water-proof papers may also be obtained in combination with burlap, cotton cloth, jute fibre or thin sheets of metal foil. Coils of steel and rolls of cloth are frequently wrapped spirally with strips of this burlap paper.

Where such water-proof wrappings cannot be used for physical reasons or for reasons of expense, some manufacturers have found it practicable to insert into the shipping container bagged quantities of silicate jell (silicon dioxide)—a chemical having the ability to absorb large quantities of moisture. This serves to hold down the relative humidity within the container over an extended period of time, maintaining this below the critical point of 30 per cent and thus effectively eliminating the formation of rust.

Special papers for packaging purposes

by D. D. Uong

NDER Special Papers for Packaging Purposes are grouped papers that are specially developed for some specific packaging requirements. The number of special papers used in the packaging industry is so great that it would be almost impossible to list them all. The purpose of this short article, therefore, is not to tabulate all the special papers for packaging purposes, but to expatiate on the important qualities of some of those that are better known and more commonly used.

The main object of using paper in packaging is twofold: protective and decorative. The protective function is primary and fundamental, while the decorative value, which appeals to the idiosyncrasies of human whims and fancies, is principally psychological. It is comparatively easy to attain either one of them, but rather difficult to attain both of these essential qualities in a single sheet of paper. Although a large number of the present special papers are made from combined products, the force of economics dictates that simpler and less expensive products of equal or better qualities must be developed to replace them. For this reason many modern paper mills are spending time and effort in the developing of special grades of papers, which can either be used directly in packaging, or lend themselves to special treatments which in turn will help them to become more suitable for certain packaging purposes.

Essential qualities

The following are some of the essential qualities of special papers for packaging purposes:

- 1) Dry strength
- 2) Wet strength
- 3) Rigidity
- 4) Pliability
 5) Softness
- 6) Cleanliness
- 7) Smoothness
- 7) Smoothnes
- 8) Absorbency9) Moisture proofness
- 10) Alkali proofness
- 11) Grease proofness

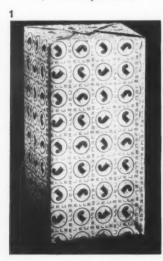
- 12) Fire proofness
- 13) Tarnish resistance14) Counterfeit proofness
- 14) Counterfelt proofin 15) Water resistance
- 16) Heat resistance
- 17) Heat conductance

The decorative qualities of paper are numerous and are exceedingly difficult to describe, because any product that is attractive and appealing has a good decorative value. It may be plain or colored, and it may be gorgeously decorated with all the hues of the rainbow in various ingenious patterns and designs. To achieve this objective the packaging industry uses a myriad of paper products, such as:

- 1) Uncoated stock
- 2) Coated stock
- 3) Combined foil4) Laminated stock
- 5) Fancy papers
- 6) Embossed papers
- 7) Half fine metallics
- 8) Lacquered stock 9) Varnished stock

A good packaging paper of a chosen decorative design may possess one or more of the protective qualities here-tofore enumerated. For reasons of economy, it should possess no more of these protective qualities than necessary, because each of them is attainable only by skill-entailing expense. As a rule, a major packaging problem can be solved better by consulting and cooperating with a manufacturer of the packaging product—possibly a manufacturer or converter of paper—than by using some ready-made product alleged to possess the so-called prescribed qualities.

The various degrees of quality cover so wide a range that, without the benefit of proper guidance, the package is not likely to obtain a right grade of paper for his purpose. What is satisfactory in one case may not be at all satisfactory in another. By presenting his problem to the manufacturer of the packaging material, the producer is more likely to solve it economically.





1. Decorative paper specially watermarked for protection against counterfeiting. 2. Resin treated paper is used for these tea bags.

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Resin treated papers

ROTECTIVE coatings for the packaging industry are of necessity compelled to meet extremely high standards of performance. They must, in general, protect the base material of the package from action of the contents, protect the contents from action of the package base material; or, as in the case of paper containers, protect the contents from outside influences. In addition, the coating itself must have no deleterious effect on either the package contents or its structural base. Briefly, the coating, in so far as performance in the finished package is concerned, should be an inert, two-way barrier.

The manufacture of most packages whether they are paper or fibre makes additional requirements of protective coatings. It is a general practice and a desirable one from the point of production efficiency to coat package stock in the flat sheet or roll form and subsequently fabricate to finished shape. There are instances where partial fabrication takes place before application of the coating, but, in any event, there are likely to be severe standards for the coating to meet in maintaining a high degree of continuity after folding, crimping, spinning, stamping, or other operations involving deformation of the base material.

Since fundamentally the ultimate consumer is more interested in the product contained in the package rather than the package itself, it is obvious that low unit cost limitations are likely to be imposed upon the package, which automatically imposes proportionate limitations on any coating involved. Everything that can be done to enable the package, so to speak, "to deliver the goods" more attractively, to permit greater ease of use and "to deliver the goods" in as near perfect condition as possible eases the economic limitations placed on the package and justifies a slight increase in unit cost. In view of current conditions, this economic factor may be overshadowed by relative availability of various coatings materials.

Paper coating and paper impregnating to get decorative or protective effects have long been practiced and, in fact, are an essential part of the paper making art. In recent years, however, the development of synthetic resins, rubber derivative materials, waxed-rubber compounds and a number of other materials has made possible a whole series of new treatments for papers generally grouped under the too narrow heading of "resin treatment." Among the most familiar of these to packagers are the pyroxylin coated papers, the vinyl coated papers and boards such as are used for closure linings, lacquered papers in which cellulose nitrate or cellulose acetate lacquers are utilized and rubber-wax composition coated papers such as are being increasingly adopted in the cheese industry and in other fields.

So broad is the field and so specialized are the various types of papers that the reader's convenience will prob-

ably be best served by an alphabetical listing of types of coatings and papers derived therefrom.

Air-brush coatings: A process in which a liquid mixture of coating pigment and adhesive is atomized by an air pressure spray and then sprayed onto the moving paper web.

Air-knife coatings: A process differing from that described above in that a thin flat jet of air is used to remove the excess coating from a freshly coated sheet. The coating is applied in excess quantities and in a semifluid state by means of a roll applicator which coats the paper. It is removed immediately by the air knife which also helps to give a smooth surface to the remaining freshly applied coating.

Casein coatings: Widely used in the sizing of papers. This material is a protein obtained from milk. Diaphanic papers: A highly transparent paper made of a chemical wood pulp. It is printed by a lithographic process and then impregnated with a lacquer containing turpentine. The dried sheet is treated with an adhesive by means of which it can be applied to a glass surface. Occasionally used for label purposes on glass containers.

Dope: Trade term signifying a solution of cellulose acetate or cellulose nitrate or ethylcellulose or benzyl cellulose in a volatile solvent such as acetone for use as a coating material.

Dry coatings: Another term frequently used for hot melt coatings.

Duplex asphalt paper: A water-proof paper formed by laminating two sheets with a film of asphalt. Generally used for fibre containers and for moisture-proof bags.

Glycerin: Used as an impregnating agent in some instances where products to be wrapped must be protected from air carrying moisture.

Heat-sealing papers: Many varnished and lacquered papers have heat-sealing qualities which facilitate their use on modern packaging machinery. Among these are varnished and lacquered papers in which the coating has incorporated in it quantities of resins or other thermo-adhesive materials. Hot melt coatings are, by their very nature, heat-sealing since they will soften again under heat. Films formed of rubberparaffin wax compositions or papers coated with such compositions are likewise heat-sealing.

Hot melt coatings: Thermoplastic coatings used as alternative to lacquers or spirit varnishes. These are melted before application, then picked up by a heated roller and transferred to the web. A high gloss varnish is achieved. More important, perhaps, a high moisture resistance and resistance to fats, oils, greases, soaps, abrasion, and scuffing are attained.

Impregnation: The process of treating paper or paperboard with a liquid used in hot asphalt treatments, in waxing and in a number of other cases.

Lacquered glassines: Glassine papers are highly grease resistant and hence are utilized for a vast number of packaging purposes, particularly for the preservation of goods, tobacco, and chemicals. The application of lacquers to glassine makes them practically impervious to air and vapors and thus serves to extend their utility. Lacquers: A broad group of materials used for coating papers to achieve decorative effects and glossy appearance and to enhance the color values of inks. They are also used to achieve protective effects such as scuff-proofness, moisture-vapor resistance, etc. Lacquers may be applied to papers before or after such processes as printing. Lacquers consist of solutions of natural or synthetic resins such as cellulose nitrate, cellulose acetate, methyl cellulose or benzyl cellulose in an organic solvent. To this may be added modifying agents such as plasticizers, resins, waxes, or pigments. The solvent evaporates, leaving the dissolved material as a shiny, continuous protective film on the surface of the treated paper.

Pyroxylin coated papers: Papers which have been coated with pyroxylin lacquers. Widely used for box coverings, labels, food wrappers, tobacco wraps, etc. Also fabricated in board stock weights for use in cartons and in displays. Pyroxylin coated papers are made in gold, silver, copper and in a wide range of tinted metallic finishes. Coating is water-repellent and has a high

deep gloss finish.

Rubber derivative coatings: These are made for high grade, low protein content rubbers. This rubber is put into solution in a solvent, forming a heavy viscous non-drying cement. The rubber cement is placed into jacketed reactor and is heated for a period of time with a catalyst. By controlling the heat and time, the physical characteristics of the product can be accurately controlled. The result of the reaction is a family of resins of differing viscosities. These resins are recovered from the solvent as a finely divided powder which is vacuum dried. The powder is then dissolved into a solvent and this is deposited as a film on the paper to be treated. The film is glossy, non-tacky, heat-sealing and clearly transparent.

A wide range of materials is made by this method to achieve varying degrees of moisture-vapor-proofness or other desired qualities. Coatings have a good anchorage to the paper. They can be heat-sealed at temperatures of from 275 to 350 deg. They can be prepared to give a wide range of gloss finishes. Thus when applied over labels, they are made with a very high gloss. When coating parchment paper, kraft paper and similar materials, the degree of gloss is not as important as other qualities more desirable. Coatings have a low permeability to gas and particularly to air and are highly moisture-vapor resistant.

Mixed with waxes, these rubber derivative materials

are used as hot melt coatings. The addition of rubber derivatives to paraffin wax substantially increases the

toughness of the wax. It improves its gloss and materially strengthens the heat seal obtained when films of these mixtures are compared with films of the wax alone.

Spirit varnishes: These are alcohol solutions usually of manila gum which dry by the evaporation of the solvent. They give a clean smooth finish over most grades of paper and are usually run over print. Care must be exercised not to use inks soluble in alcohol on sheets to be spirit varnished. (See also varnishes.)

Varnishes: Varnishes are solutions of resins (copal, shellac, etc.) in a solvent such as turpentine or linseed oil. Usually a drier is also included. After evaporation of the volatile elements in the solution and the oxidation of the non-volatile elements, a thin shiny layer of the dissolved material remains. Varnishes are often utilized as an after-print coating and are then called overprint varnishes.

Vinyl resins: Vinyl resins or co-polymer vinyls are formed by the simultaneous co-polymerization of vinyl chloride and vinyl acetate. The resultant product is a tough, colorless, transparent resin soluble in a number of solvents. Vinyl resins are applied by three principal methods. The first is the solution coating method in which a roll or doctor blade is used to control the application of the film. In such cases, it is necessary to "force dry" or bake the coated stock in order to rid the film of the last trace of the solvents, since co-polymer vinyl resins are not heat hardening. For film thicknesses such as are used in connection with the packaging industry, a few minutes of such baking at approximately 250 deg. F. is usually sufficient.

Calender coating of vinyl resins is accomplished by working the plastic mass into a thin film over heated rolls, then calendering this film continuously on to paper which is fed through the machine at the same rate as the film is formed. Vinyl calender coated papers are widely used as liner material in closures for food products. Solution coated papers seem to be better fitted for the wrapping grades, since a thinner coat can be applied by the solution method. Aluminum foils, such as are used for cheese wrappers, are frequently treated with a

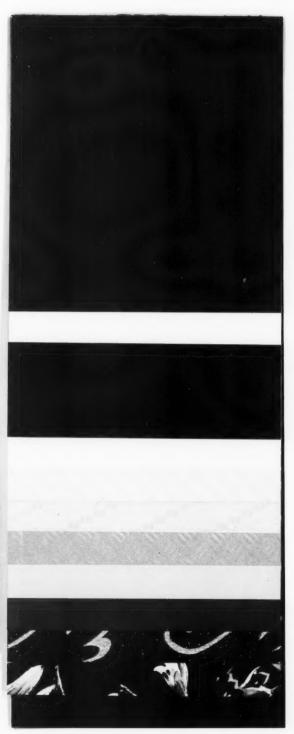
thin clear coat of co-polymer vinyl.

The thermoplastic qualities of co-polymer vinyl resins suit them particularly for cases where heat-sealing is required. Solution coating is used on labels to achieve resistance to water, alcohol, alkali or grease.

The third coating method has but recently reached the commercial stage and involves the use of vinyl emulsions. The method is particularly desirable for coating the surface of porous materials with a minimum consumption of resin per unit of surface covered. This is possible because the water strikes into the porous surface first and thus prevents penetration of the lacquer. The method seems to have particular application for use in conjunction with pulp containers.

Wax-rubber coatings: Wax is frequently mixed with rubber derived materials to form moisture-vapor resistant coatings of the hot melt type.

NOW - more than ever before... American ingenuity will be called upon to solve Packaging problems



Accepting the Challenge . . . we pledge full co-operation to National Defense in the conservation of essential materials and to the Packaging Industry in research and development effort.

We offer our facilities . . . Tell us your problem and we gladly will work with you.

Papers shown here are well established as distinctive and dependable Package Coverings. Many others available . . . Sample books and work sheets sent on request.

8-C-21	HAZENKOTE GLOSS
	High gloss - waterproof
8-C-07	Pastel and brilliant colors
8-C-22	
A G	ARFOIL - Metallics
	(A Foil Substitute)
AN	Gold - silver - colors
4215	HAZENKOTE EMBOSSED
	Pastel and brilliant colors
6014	in a variety of patterns
56M 46	MICA EMBOSSED
00M 40	Wide range of colors
3M 53	and distinctive patterns
	KIDSKIN
204	Smooth pigmented lacquer
	Coatings in a wide range
207	of Pastel and brilliant colors
A7-42-A8	CHLORIS - A New Print design
	Many printed designs available
A5-59-22	FREESIA - This floral in several color combinations

BEAUWOOD - An outstanding woodgrain design - in effective colors

HAZEN PAPER COMPANY, Holyoke, Massachusetts

Excelyne No. 24844 Announcement and Greeting Card Paper

Research

FOR PACKAGING PAPERS

THE research laboratory of S. D. Warren Company has found solutions to a variety of problems related to the use of papers and the manufacture of them.

Research studies conducted over a period of years have produced an accumulation of fundamental information regarding the potentials of a great range of materials and methods.

Now that emergency conditions threaten to restrict the supply of materials employed in the packaging of goods, an accumulated knowledge of the possibilities of substitute materials is especially valuable.

Manufacturers of packaged products, who foresee a probable need for finding new packaging materials, are invited to discuss the application of Warren research to their problems.

S. D. WARREN COMPANY, 89 BROAD ST., BOSTON



Papers for Special Packaging Requirements

PROGRESS in packaging has been steady, but very often those who watch it each day come to take it for granted. Heat-seal packaging offers a fine example of this "marvelous today, matter-of-fact tomorrow" spirit.

Barring the time-honored use of sealing wax, the first commercial use of heat as a means of more efficient packaging was for sealing waxed paper on bread, baked goods, and similar packages. The advent of cellophane that could be sealed by heat marked a second milestone, and widespread expansion in the use of heat for the sealing of packages followed. Manufacturers of packaging machinery aided progress with special equipment of more and more varied design. They developed machines to fit highly individualized needs and they also perfected small, relatively inexpensive units which could be attached to existing machinery to adapt it for heat-sealing.

Advantages of heat seals

Gradual improvements continued. Then a few years ago, came a new and probably the most spectacular de-

velopment: the use of regular labeling papers coated with a heat-sealing adhesive. Papers coated with this adhesive have been proved to have five outstanding advantages, which lead to considerable improvement in appearance of the packages as well as economy in speed and packaging.

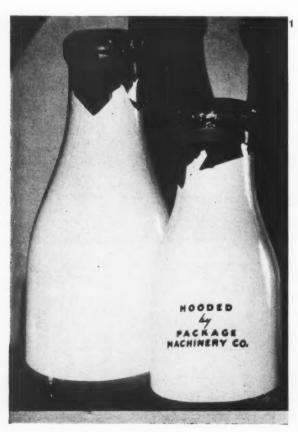
1. Adhesion to difficult surfaces: Heat-seal papers can be applied to waxed paper, carbon paper, cellophane, glass, and similar hard-to-stick-to surfaces. Special adhesives have been and are being developed to meet special requirements.

2. Speedy adhesion: Heat-seal labels adhere quickly to any surface to which they are applied, an important quality in modern high-speed machinery.

3. Strong adhesion: A heat-seal bond on any of the surfaces for which it is designed will really stick.

4. Non-toxicity: A special heat-seal adhesive has been developed for use on labels for food products. This adhesive is more than just non-toxic; it is absolutely tasteless and odorless.

 The tape on these milk bottles is used with a piece of moisture-proof cellophane to form an over-cap.
 Quick, positive closure is afforded over-wraps on these cleaning powder cans by the simple application of heat-seal tape.





PACKAGING CATALOG

Williams Box Covering Papers

for all occasions.

A paper for every requirement for Holiday and Every Day use.



CHARLES W. WILLIAMS & CO., Inc.

· Authorities on Box Covering Papers ·

303 LAFAYETTE STREET NEW YORK

624 SOUTH MILLER STREET CHICAGO 167 OLIVER STREET BOSTON

Your Packaging ...

For over forty years "Williams" has been creating and offering the finest of attractive papers for box coverings—

When planning your next paper box let "Williams" help you to select the appropriate covering paper . . . an extensive assortment of colors, printed designs and embossing patterns to choose from.

· Send for sample books ·

CHARLES W. WILLIAMS & CO., Inc.

· Authorities on Box Covering Papers ·

303 LAFAYETTE STREET NEW YORK

624 SOUTH MILLER STREET CHICAGO 167 OLIVER STREET BOSTON





3. Bread end labels, heat-sealed on waxed paper, hold tight even in humid weather. 4. End labels are made for cake wraps as well as other baked goods. Method of applying labels on cake wraps differs slightly, however, from the method commonly used for applying end labels to bread packages.

5. Water-proof: Heat-seal papers, if varnished or lacquered after printing, are not affected by moisture or even by the actual presence of water, either before or after they are applied.

That there is a wide variety of uses for a material with the foregoing characteristics is obvious from a consideration of the progress actually made by a typical manufacturer of packaging accessories.

This firm manufactures heat-seal adhesives, applies them to the basic stock, then prints and otherwise converts the stock thus treated into final form for use in packaging machinery. Developments have varied from applying bands on frankfurters to packaging telephone cords. All are interesting. Some are likely to suggest solutions to packaging problems that are common to many manufacturers.

Special uses developed for package sealing tapes are enumerated below, although this list is by no means complete.

Bags and cans: This kind of tape is frequently used on bags and cans. A silver colored band on a bag of coffee harmonizes with the package and helps to create maximum eye-and-buy appeal as well as assuring an airtight closure. The heat-seal tape is needed for the overwrap on the cleaning powder because the fullness of the cellophane at the bottom of the package was hard to gather and seal by any other method. With this tape a quick positive closure is certain.

Wire: Heat-seal tape is also used for packaging standard lengths of telephone cord to simplify storage, make inventory easier, and have the name and length of each wire directly on each piece. The heat-seal band was

adopted because of its good bonding strength. Special means for automatic application were worked out by the company adopting this method.

Milk bottles: One of the earliest developments in heat-seal packaging is the milk bottle tape, used with a piece of moisture-proof cellophane to form an overcap. Several advantages over any other type of overcap are:

- 1. Greater attractiveness: The tape, cellophane, or both are used in a variety of colors.
- Only one printing is required: Printing on the inner cap is visible through the cellophane whether a clear or colored variety is used.
- Can be used as a code: Different colors of cellophane and/or tape can be used to signify either different types of milk products, different days of the week, or both as may be desired.
- 4. Greater security: The tape seals securely not only where it is overlapped on itself, but also forms a complete circular bond to the cellophane.

Bread: The new end labels on bread represent the use of heat-sealing on waxed papers. They reduce the need for rewrapping; they hold tight even in humid weather, and make the bread instantly recognizable when packed end out on a crowded shelf with competing brands. A labeling unit attached to the wrapping machine applies the labels quickly and permanently. A variation of this application is that used for cakes and a variety of other baked goods.

Carbon discs: Another unusual application of heat-sealing was worked out for some discs of carbon paper used as an attachment for a special typewriter. Labels were wanted on the carbon side of the discs for identification of trade name as well as to avoid smudging the fingers during handling. Ordinary adhesives were found unsatisfactory but the new types of heat-seal labels gave good results and they could be applied so much faster that the production rate went up 25 per cent.

Blue-prints: Heat-sealing is used to protect valuable blue-print designs kept in large files for ready reference. Ordinary gumming does not adhere to the special blue-print stock, and special solutions might affect the blue-prints, but a specially designed corner protector gummed with heat-seal adhesive worked out successfully. An additional design was developed to reinforce the edges of the prints where they were folded.

Belted frankfurters

Yet another use for heat-sealing is for frankfurters. Millions upon millions of these bands were used within the past year by packers all over the United States, who found them profitable to use because the identification

- 1. Prevents substitution at the point of sale.
- Builds prestige and good will through advertising both product and brand name.
- Provides a sound basis for other advertising and sales promotion.
- 4. Improves the appearance of the product.
- Avoids errors in filling orders, and confusion in shipping.

The packers preferred heat-seal bands over any other

type not only because they are near and colorful and consumers like them, but also because they are resistant to both water and grease, stick only to themselves, are absolutely tasteless, tell a complete sales story, and are easy, quick, and inexpensive to apply.

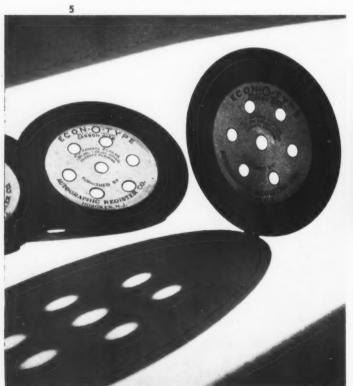
The adaptability of the technique of heat-sealing to packaging problems is evident. Not so obvious, but just as sure and important is the adaptability of heat-sealing to modern high-speed packaging methods. The manufacturers of packaging machines deserve credit for fine work in the developing of simple, not too costly, new machines, and new attachments for existing machines which make the application of heat-seals speedy as well as inexpensive.

Many additional uses

Aside from those used for heat-sealing, gummed cellulose tapes find a variety of applications throughout the entire country in stores and industrial plants for the sealing of unit packages, bags, etc., and for attaching small items to cards. The cellulose tape most widely used is made of No. 600 pt. cellophane and a pure latex adhesive, and it seals with a touch of the finger. It is available in colorless and transparent types, a variety of bright colors and designs, and in several widths and lengths of rolls.

Dispensing devices are conveniently adapted to the needs of the user. Many industrial salesmen carry a small hand dispenser on retail calls for attaching window posters and repairing crippled transparent wraps in the dealer display. This device is now almost a standard item of equipment on every desk, in offices or homes. A heavy duty dispenser (with cut-off device) for use

5. Another indication of the adaptability of heat-sealing to a wide variety of uses is found in labels for these Econ-O-Type Discs, a special typewriter attachment. 6. Heat-seal bands for frankfurters are water and grease resistant, tasteless and tell a sales story. Photos 1 to 6, Dennison Mfg. Co.







Champion Kromekote



Kromekote Box Paper, in white and nine colors; carried in 26 inch rolls, three reams 20 x 26 to the roll, white and ivory in weights 30 and 33 lb.; colors, 30 lb. only. Kromekote Litho, white only, 25 x 38, 28 x 44—60 lb. Kromekote Label, 20 x 26—30 lb., white and nine colors. Kromekote Postcard, white only, 22½ x 28½—.012. Kromekote Cover, white only, 20 x 26, 23 x 35—.010. All grades of Kromekote are coated one side only.

THE FOUNDATION FOR

Champion Kromekote* is as bright and cheery as Christmas itself. Its smooth shiny surface catches and reflects lights from everywhere, and Kromekote covered packages stand out like multicolored lights on a tree. Eight years of research and experiment were required to perfect this exclusive, patented process. But this effort was rewarded by unique and immediate acceptance of Champion Kromekote by the makers of the finest packages, labels, and greeting cards. Commercial printers too were quick to recognize its suitability for unusual inserts, mailing cards, menus, direct mail, and many other pieces. When you need something especially striking for your package, label, or advertising promotion, be sure to get complete facts about new, exclusive Champion Kromekote.



*Kromekote is the registered trade-mark of The Champion Paper and Fibre Company's cast coated high finish paper.





THE CHAMPION PAPER AND FIBRE COMPANY HAMILTON, OHIO

MILLS AT HAMILTON, OHIO . . . CANTON, N. C. . . . HOUSTON, TEXAS

CORRODEK The "Economy-Plus" Color Corrugated PROTECTS WHILE IT SELLS

Critical shortages in container materials make it more important than ever before to have packages that do double duty. In this emergency, CORRODEK offers the ideal solution for an ever widening range of products. Its corrugated design gives greater protection with less weight . . . its 3-dimensional surfaces are beautiful in their simplicity. Both beauty and strength are increased through improved production processes . . . while new packaging applications are constantly broadening the usefulness of this "Economy-Plus" packaging medium!







MANY STYLES—SHAPES—SIZES
CORRODEK protective packaging can be furnished
in practically any style, shape or size; for hand or
mechanical packing.

MANY MATERIALS—COLORS—DESIGNS
CORRODEK offers glassine, greaseproof and parchment papers as well as bonds, krafts, chips and many
others... plus a great range of colors. Designs may
be printed on either side.

FREE PACKAGING SERVICE

Now when shortages threaten your supplies, look into the possibilities of CORRODEK. Ask for samples of this "ECONOMY-PLUS" material . . . or let Sherman Packaging Engineers recommend a solution for your packaging problems.

SHERMAN PAPER PRODUCTS CORPORATION

NEWTON UPPER FALLS, MASSACHUSETTS **NEW YORK** CHICAGO LOS ANGELES







7. Motorized box sealer for dispensing pressure sensitive tape. 8. Small strips of transparent tape hold the bands and wraps on men's underwear. 9. Bits of tape attach poster to window. Photos Minnesota Mining & Mfg. Co.

with 72-yd. rolls makes a quick neat job of any hand sealing problem from toast to ladies' undies.

The latest development for dispensing cellulose tape is the motorized box sealer for telescope-type boxes. This device applies up to 110 equal length strips of tape a minute, each of which seals instantly on contact, in a strong, positive seal that will not dry out or loosen. Users of this new sealing device claim increases as high as 400 per cent over other sealing or tieing methods.

End labels

The idea of an end label for packages of bread is old but the execution of it by means of heat-sealing was perfected and introduced commercially only during 1941.

End labels are supplied in rolls, printed and die-cut to proper size and shape. A thermoplastic coating which is sanitary, odorless, and tasteless, is applied to the sealing side of the label, to provide dependable sealing to waxed paper, cellulose, or lacquered paper.

An attachment (which fits any bread-wrapping machine without major readjustments) applies the label automatically and so completely that the sealed label is virtually a part of the wrapper.

Advantages claimed for the label are:

- 1. Perfect identification of brand at point of sale.
- A new medium for the advertising of special ingredients, allied products, changes in price, dates, code numbers, institutional copy, slogans, etc.
- Perfect sealing reduces expense of re-wrapping during packaging.
- Saving in paper; the firm bond seals even a narrow width completely.
- Reduces returns of stale bread due to open ends and poor sealing.
- Permits re-design of wrappers with less ink coverage on ends of loaf, which reduces cost of bread wrapper.

Figures assembled by several baking firms that use end labels prove that the combined economies of the development will in some cases practically offset the cost of the labels.

PROPERTIES	CELLULOSE DERIVATIVES							
	Sylvania Cellophane	Semi-moistureproof Lumarith Protecteid	Moistureproof Lumarith Protectoid	Inceloid A	Inceloid E	Amyloid		
GENERAL								
Type of material	Regenerated cellulose	Cellulose Acetate	Cellulose Acetate	Cellulose Acetate	Ethyl Cellulose	Coated Starch		
Forms available	Sheets and continuous	Continuous rolls	Continuous rolls	Continuous rolls	Continuous lengths	Continuou lengths		
Clarity	Transparent	Transparent	Transparent	Transparent	Transparent	Transpare		
Thickness range, in.	.000880025	.00070002	.000880012	.0005003	.0005008	.00100		
Maximum width, in.	54	42	40	48	48	14		
Area factor, sq. in./lb. for 1 mil thick sheet	19,800-21,300	21,000-21,800	21,500	22,200	24,300	20,100		
Specific gravity	1.3-1.4	1.27-1.32	1.29	1.25	1.14	1.38		
MECHANICAL		*						
Tensile strength, lb./sq. in.		6000-11000	9000	11000	9600	6200		
Elongation, percent	15-25	9-25	16-18	12-20	40-70	8-12		
Bursting strength (Mullens Test), lb./sq. in. for l mil thick sheet	40	26-36	30	34-38	2,8-33	18-22		
Tearing strength (Elmendorf), g.								
Folding endurance		1500-4000 (Schopper)	ca. 3000 (Schopper)					
CHEMICAL								
Water absorption in 24 hr.	High	3.5-8.0	5	••	0.4	6		
Moisture wapor permeability, g/24 hr./m.2/mm.Hg for l mil thick sheet	38-360, or- dinary type; .06-1.6 mois- tureproof type	35	.11	.64	.24	34		
Permeability to gases		Low	Low					
Resistance to acids	Poor	Poor	° Poor	Poor	Good	Poor		
Resistance to alkalies	Poor	Poor	Poor	Poor	Good	Poor		
Resistance to greases and oils	Good	Good	Good	Good	Fair	Good		
Resistance to organic solvents	Insoluble	Soluble except in hydrocarbons	Soluble except in hydrocarbons	Soluble except in hydrocarbons	Soluble	Good		
PERMANENCE			-					
Resistance to heat (Limiting Temp.) OF.	Not resistant	140-200	140	180	180	150		
Resistance to cold (Limiting Temp.) OF.		-20	-20	-20	<-40	50		
Resistance to sunlight		Good	Good	Good	Satisfactory	Satisfa		
Dimensional change at high relative humidity	Less than 5% expansion			2% expansion:	,	Up to expans		
Resistance to storage		Good	Good	Good	Good	Good		
Flammability	Similar to	Slow burning	Slow burning	Slow burning	Slow burning	Nonflam		
MABUFACTURER	Sylvania Industrial Corp.	Celanese Cell New York,		Americ	can Products Man New Orlean	nufacturi ns, La.		

The values in the accompanying chart are based of material are often available which excel in o

								CACCI III O	
PROD	UCTS	VII	NYL RESIN PR	ODUCTS	RUBBER BASE PRODUCTS				
Amyloid	Carbofilm	Soft Koroseal	Hard Koroseal	Vinylite Coated Paper	Pliofilm	Parafilm	Parakote	Paraply	
Coated Starch	Coated carbo- hydrate gums	Plasticized polyvinyl chloride	Plasticized polyvinyl chloride	Polyvinyl chloride acetate on sulfite paper	Rubber Hydrochloride	Composition of waxy & rubbery materials (Paraweld)	Paraweld coated on paper & foils	Laminated produ prepared with P weld coated she	
Continuous lengths	Continuous lengths	Rolls in 100 to 300 yd. lengths			Continuous rolls	Continuous rolls	Continuous rolls	Continuous rolls	
Transparent	Transparent	Transparent to opaque	Transparent to opaque	Opaque	Transparent to opaque	Translucent	Translucent to opaque	Opaque	
.001003	.001003	.001003	.001003	Film .002 Paper .003	Normal .000800225 Tensilized.00020004	.003020	.002080	.004030	
14	14	36	36	40	48	22	36	55	
20,100	19,600	22,150	19,800		24,100-24,700				
1.38	1.41	1.25	1.40	.27 lb./sq. yd.	1.12-1.15	0.90			
6200	8400	**				1000-2000			
9-12	16-28	**			Yield 10-20 Ultimate 350-500	200			
18-22	24-28			25-30					
				45-50				,	
				Poor	10000-1000000 (M.I.T.)				
6	4	Very low	Negligible		0.9 at 75% R.H.	Nil		-	
34	29			Plain .75-1.13 Waxed .2353	0.1	Very low	Low	Low	
					Relatively permeable to COp	Low	Low	Low	
Poor	Poor	Good	Good	Good	Good	Good		••	
Poor	Poor	Good	Good	Good	Good	Good			
Good	Good	Good	Good	Good	Good	Poor	Fair to good	Fair to good	
Good	Good	Soluble except in aliphatic hydrocarbons	Soluble except in aliphatic hydrocarbons	Plasticizer is extracted	Soluble in aromatic & chlorinated hydro- carbons	Soluble			
150	160	150	150	120	160	120			
20	10	-50		-50	0	-30			
atisfactory	Satisfactory	Good	Good	Fair	Fair	Fair			
Up to 11% expansion	Up to 6% expansion	Slight	Slight	Slight	Slight	None			
Good	Good	Good	Good	Good	Good if kept cool and in dark	Good			
onflammable	Nonflammable	Nonflammable	Wonflammable	Moderate	Slow burning	Moderate			
acturing Company B. F. Goodrich Company Akron, Ohio			Carbide and Carbon Chemicals Corp., New York, N.Y.	Goodyear Tire & Rubber Co., Inc. Akron, Ohio	Mara	thon Paper Mills C	co.		

PROPERTIES OF WRAPPING MATER

are based upon data submitted by the manufacturers of the wrapping materials. Differences in testing conditions and procedures ma excel in one particular property. The manufacturers should always be consulted before making a choice of material. Because of war-

			PAPER PRODUCTS									
paraply	Cry 0 Vac	Genuine Vegetable Parchment	Plain Glassine	Lacquered Glassine	Waxed Glassine	Laminated Glassine	Pliolux	Tinick Bright Silver	Tinick Bright Gold	Alum Bright		
Aminated products repared with Para- meld coated sheets	Latex film used for frozen foods	Chemically treated paper	Physically treat- ed paper	Treated paper	Treated paper	Treated paper	Treated paper	Coated paper	Lacquered paper	Coated		
Continuous rolls	Unexpanded bags Expanded bags	Sheets and rolls, many weights & grades	Continuous rolls	Continuous rolls	Continuous rolls	Continuous rolls	Rolls and sheets	Continuous rolls	Continuous rolls	Contir		
Opaque	Transparent	Translucent to opaque	Near transparency to translucency	Transparent	Nearly trans- parent	Translucent	Transparent	Translucent	Translucent	Translu		
.004030	Unexpanded .013020 Expanded .0015002	.00170055	••				0.0011-0.0012					
55	For 1-1b. to 400-1b.	66	60	50	50	35	48	26	26	26		
	·	20 to 70 lbs./ream	16-40 lb./ream (Ream=500 sheets -	23-33 lb./ream 24 x 36 in.)	23-33 lb./ream	37-55 lb./ream	27-33 lb./ream	30-40 lb./ream	30-40 lb./ream	40-55 1		
	0.935	**								-		
	15,000 @ 40°F.	High wet strength								-		
	(expanded film)											
	1500											
		13-65	11-28	16-23	16-23	26-41	15-28	23-24	23-24	24-		
		14-76	8-26	11-21	11-21	20-38	8-16		***	-		
		High					**			-		
	Negligible	High, but insoluble	High	High		Righ		High	High	H1		
Low	Negligible	Permeable	35-65		0.34-7.6		0.435	Permeable	Permeable	Perme		
Low	Permeable to COg; negligible to other	Permeable	Low	Low	Low	Low	Low	Permeable	Permeable	Perme		
**	Common gases	Dilute: good	Moderate	Moderate	Moderate	Moderate	Good	Poor	Poor	Poo		
	Good	Dilute: good	Poor	Fair	Poor	Poor	Good	Poor	Poor	Poo		
Fair to good	Excellent below 30°F.	Fair to excellent; insoluble	Moderate	Good	Depends upon ef- fect on paraffin	Moderate	Good	Poor	Lacquer side resistant	Poo		
	Soluble except in Alcohols, Ketones and Ethers		Good	Coating sol- uble in most solvents	Solvents remove paraffin	Good	Depends on solvent	Absorbs	Dissolves lacquer	Absor		
					1							
••	Heat shrinks ex- panded bag to size of package	200 dry; any temp.,	200	200	200	200	110	200	200	200		
	-50						Good	32	35	32		
		Good	Good	Good	Good	Good	Poor	Tarnishes	Tarnishes	Goo		
	Negligible Negligible	Expands, stretches	Slight	Slight	Slight	Slight	Slight	Considerable	Considerable	Slig		
	Excellent at 40°F and below	Good	Good	Good	Good	Good	Good	Poor	Poor	Goo		
	Slow burning	Similar to paper	Similar to paper	Similar to paper	Similar to paper	Similar to paper	Similar to paper	Similar to paper	Similar to paper	Simila pape		
	Dewey & Almy Chemical Co. Cambridge B, Mass.	Kalamazoo Vegetable Parchment Company Kalamazoo, Mich.	The	Riegel Paper Cor New York, N			Rhinelander Paper Company Rhinelander, Wis.		Keller-Dorian	Paper Con		

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PING MATERIALS

sting conditions and procedures may lead to erroneous conclusions in some cases if direct comparisons are att choice of material. Because of war-time restrictions some of the wrapping materials listed in the chart are not

olux	Tinick Bright Silver	Tinick Bright Gold	Aluminite Bright Silver	Aluminite Bright Gold	Aluminite Mat Silver	Kidskin	Wetallac	Resist-All	Pyroxylin M Paper
paper	Coated paper	Lacquered paper	Coated paper	Lacquered paper	Coated paper	Pigmented coated paper	Bronze coated paper	Coated paper	Pyroxylin & powders coa paper
and ts	Continuous rolls	Continuous rolls	Continuous rolls	Continuous rolls	Continuous rolls	Continuous rolls; sheets	Continuous rolls; sheets	Continuous rolls; sheets	Continu rolls; s
rent	Translucent	Translucent	Translucent	Translucent	Translucent	Translucent to opaque	Translucent to opaque	Translucert to opaque	Opaqu
-0.0012						.002018	.018	.018	.003-
3	26	296	26	96	26	52	52	52	5
lb./ream	30-40 lb./ream	30-40 lb./ream	40-55 lb./ream	40-55 lb./ream	40-55 lb./ream				
									-
		~~							-
	**		**						-
28	23-24	23-24	24-30	24-30	24-30				27 for 50 stock
16									3 pt.:3

-	High	High	High	fligh	High	Coated side waterproof	Coated side waterproof	Coated side waterproof	High
35	Permeable	Permeable	Permeable	Permeable	Permeable	Permeable	Permeable	Low	Moderately
W.	Permeable	Permeable	Permeable	Permeable	Permeable	Permeable	Permeable	Low	Moderately
đ	Poor	Poor	Poor	Poor	Poor	Moderate	Poor	Good	
đ	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	
đ	Poor	Lacquer side resistant	Poor	Lacquer side resistant	Poor	Lacquer side resistant	Lacquer side resistant	Lacquer side resistant	Fair to go
s on ent	Absorbs	Dissolves lacquer	Absorbs	Dissolves lacquer	Absorbs	Dissolves in lacquer solvent	Dissolves in lacquer solvent	Soluble in alcohol	
	800	800	200	000		800		150	
0	200	200	200	200	800	800	800	150	160
	3.8	32	32	38	35	0	0	-10	
	Tarnishes	Tarnishes	Good	Good	Good	Slow fade	Slow tarnish	May discolor	Good
ht	Considerable	Considerable	Slight	Slight	Slight				Similar to p
	Poor	Poor	Good	Good	Good	Excellent	Fair	Excellent	Good
r to	Similar to paper	Similar to paper	Similar to paper	Similar to paper	Similar to paper	Faster than paper	Faster than paper	Similar to paper	Similar t paper
nder mpany nder,			Paper Company, In	Ha	zen Paper Compan Holyoke, Mass.	у	Dennison N		

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ns are attempted. Special grades t are not available for purchase.

	PAPE	PRODUCTS								ME
Pyroxylin Metallic Papers	c Heat-Seal Papers	Old Tavern	Renlcote	Reniflex "A" (a)	Reniflex *A* (b)	Renlflex "B"	Laminated Kraft	Kraft Paper	Aluminum Foil	Tin For
Pyroxylin & metal powders coated on paper	Resinous ma- terials coated on paper	Coated paper	Coated paper (Argentine Finish)	Laminated Kraft Paper - Metal Foil - Rubber Hy- drochloride Film	Laminated Bond Paper - Metal Foll - Rubber Hy- drochloride Film	Laminated Kraft Paper - Wetal Foil - Bond Paper for Tight Wrap	Laminated Kraft Paper for Liners			
Continuous rolls; sheets	Continuous rolls; sheets	Rolls & sheets	Rolls & sheets	Rolls & sheets	Rolls & sheets	Rolls & sheets	Rolls & sheets		Rolls & sheets	Rolls & sh
Opaque	Opaque	Opaque	Translucent	Opaque	Opaque	Opaque	Opaque	Opaque	Opaque	Opaque
.003015	.003010	.003 up				**		.002009	.0003~.005	0.0006-0.
52	52	52	301	£8 }	221	40	40		30.5	26 }
·		30 lb. up/ream	45-65 lb./ream	190-210 lb./ream	140-160 lb./ream	200-220 lb/ream	80-100 lb./ream		10,250	3750
						**			2.7	7.8
								70% of basic wt.	6500-11000	
								2-5	2-15	
27 for 50 lb. stock	27 for 50 lb.	15 up	25 -2 7	45-50	35-40	55-60	50-60	90≸ of basic wt.	16-17	4-7
3 pt.:30-36	3 pt.:30-36		36-50	170-180	110-120	160-180		2 pts. per 1b. of basic wt.		
								20 double (Schopper)		
High	High	High	High	High	High	High	High	High	0	0
Moderately lov	50 lb.stock: .1180 (not corrected for thickness)	Permeable	Permeable	0	0	0	Slightly permeable	75-250	0	0
Moderately Low	Low	Permeable	Permeable	0	0	0	Permeable	Permeable	0	0
		Moderate	Poor	Good	Good	Poor	Poor	Poor	Poor to good	Poor to go
		Poor	Poor	Good	Good	Poor	Poor	Poor for caustics	Poor to good	Poor to go
Fair to good	Fair to poor	Fair	Poor	Good	Good	Poor	Poor	Poor	Good	Good
		Good	Poor	Soluble in aromatic & chlorinated hydrocarbons	Soluble in aromatic & chlorinated hydrocarbons	Poor	Poor	Not resistant	Good	Good
160	120 - limited periods	200	800	160	160	120	150	200	700	300
			Good	Good	Good	Good	Good		>-120	
Good	Fair	Good	Fair to Good	Excellent	Excellent	Excellent	Excellent	Colors may fade	Unaffected	Unaffecte
Similar to paper	Similar to paper	Slight	Considerable	Slight	Slight	Slight	Considerable	Considerable	None	None
Good	Good	Good	Good	Good	Good	Good	Good	Avoid dampness, high heat, and low humidity	Unaffected	Unaffecte
Similar to paper	Similar to paper	Similar to paper	Similar to paper	Slow burning	Slow burning	Burns readily	Burns readily	Burns readily	Not combustible under ordinary conditions	Not combust
Dennison Manufac Framingham	cturing Company	McLaurin-Jones Co. Brookfield, Mass.			Reynolds Metals C Richmond, Va.	0.		Union Bag & Paper Corp. New York, MY	Aluminum Co. of America Pittsburgh, Pa. and Reynolds Metals Co.	

		FOILS	METAL				
	Tin and Lead composition foil (4% Tin)	Lead Foil	Tin Foil	Aluminum Foil	Kraft Paper	Laminated Kraft	ex "B"
GEN							
Type			**	**	**	Laminated Kraft Paper for Liners	ted Kraft - Wetal Bond Paper ght Wrap
Form	Rolls & sheets	Rolls & sheets	Rolls & sheets	Rolls & sheets		Rolls & sheets	& sheets
Clar	Opaque	Opaque	Opaque -	Opaque	Opaque	Opaque	paque
Thic	0.0006-0.002	0.0006-0.002	0.0008-0.002	.0003005	.002009		
Maxi	26 }	26}	26 <u>}</u>	30.5		40	40
Area	2500	2400	3750	10,250		80-100 lb./ream	0 lb/ream
Spec	11.1	11.3	7.3	2.7			
MEC							
Tens				6500-11000	70% of basic wt.		
Elon				2-15	2-5		**
Burs (N	6.5-9	4-6	4-7	16-17	90% of basic wt.	50-60	55-60
Tear					2 pts. per 1b. of basic wt.	**	60-180
Fold					20 double (Schopper)		
CHE							
Wate	0	0	0	0	High	High	h
Mois g/ 1	0	0	0	0	75-250	Slightly permeable	
Pern	0	0	0	0	Permeable	Permeable	
Resi	Poor to good	Poor to Good	Poor to good	Poor to good	Poor	Poor	
Rest	Poor to good	Good	Poor to good	Poor to good	Poor for caustics	Poor	
Resi	Good	Good	Good	Good	Poor	Poor	
Resi	Good	Good	Good	Good	Not resistant	Poor	
PERA							
Resi (L	450	500	300	700	200	150)
Resi (L		**		>-120		Good	
Resi	Unaffected	Unaffected	Unaffected	Unaffected	Colors may fade	Excellent	lent
Dime	None	None	None	None	Considerable	Considerable	it
Resi	Unaffected	Unaffected	Unaffected	Unaffected	Avoid dampness, high heat, and	Good	1
Plan	Not combustible	Not combustible	Not combustible	Not combustible under ordinary conditions	Burns readily	Burns readily	readily
MANUFAC	Co.	Reynolds Netals (Richmond, Va.		Aluminum Co. of America Pittsburgh, Pa. and Reynolds Metals Co.	Union Bag & Paper Corp.		

PROPERTIES
GENERAL
Type of material
Forms available
Clarity
Thickness range, in.
Maximum width, in.
Area factor, sq.in./lb. for 1 mil thick sheet
Specific gravity
MECHANICAL
Tensile strength, 1b./sq. in.
Elongation, percent
Bursting strength (Mullens Test), lb./sq. in. for l mil thick sheet
Tearing strength (Elmendorf), g.
Folding endurance
CHEMICAL
Water absorption in 24 hr. immersion test, percent
Moisture vapor permeability, g/24 hr./m/mm.Hg for l mil thick sheet
Permeability to gases
Resistance to acids
Resistance to alkalies
Resistance to greases and oils
Resistance to organic solvents
PERMANENCE
Resistance to heat (Limiting Temp.) of.
Resistance to cold (Limiting Temp.) OF.
Resistance to sunlight
Dimensional change at high relative humidity
Resistance to storage
Flammability
MANUFACTURER

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Leatherette boxes and containers

OR years, genuine leather was considered the finest covering for display boxes of all kinds. Containers for jewelry, boxes for instruments, cosmetics, cutlery, sewing kits—all were adorned with animal hide. And rightly so, for leather is beautiful, enduring, colorful, easily manipulated, and always in good taste. But leather is expensive, so it is now usually reserved for only the more exclusive styles in packaging. In its place came leatherette. This versatile material is now made to simulate any kind of genuine leather and the better grades are practically indistinguishable from the real article.

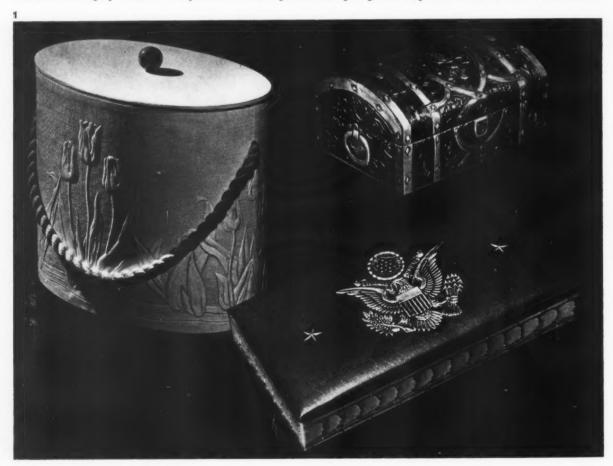
Developments in materials and ideas on fabrication have widened the scope of application of leatherette in the field of modern packaging far beyond just "imitation leather boxes" in the previously accepted sense of the word "leatherette." Not only are richer and more

real leather-like effects obtainable—but these same basic leatherette materials can be and are being used to simulate effectively such fabrics as linen, burlap, etc.—materials quite different from leather or leatherette.

Leatherettes consist essentially of a base of cloth or long-fibred paper with a strong flexible pyroxylin coating. They have good tensile strength, and a surface that wears well, are not easily soiled or scuffed and are simple to clean with a damp cloth. They are obtainable from the mills in unlimited colors, beautiful pastel shades as well as the shades more typical of leather, and in smooth finishes, various grains like leather, or the ultimate design desired in a package.

Design does not mean the grain or pattern impressed in the material as it comes from the mill, but rather the design that is superimposed over this grain or pattern, such as a tooled-leather effect in a panel, crest, or decora-

1. Oval sewing basket of fibreboard, with embossed leatherette wrapper in linen and tulip design. Embossing and graining is accomplished in one operation. Overtone wash gives yellow background with tulips in white. The domed-lid treasure chest is embossed and highly colored for antique effect. Rectangular box has goat-grain background for embossed seal in full colors.



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2. Round metal shells fabricated with leatherette, deeply embossed and brilliantly colored. A molded plastic effect is given to the bird on lid. Another simulates beautiful carved cinnabar, while the third looks like famous bas-relief Wedgwood

tive borders on lid and sides of a box. These designs are applied to the material before fabrication, by stamping or embossing or a combination of both processes. In stamping from leaf or foil, the coloring (gold or silver) is pressed into the material in the stamping process. In embossing, the design is first stamped into the material, and color is then sprayed on to certain details through metal stencils or masks. Highly colorful effects are obtainable. The bronze powders or enamels are applied with a vehicle of much the same character as the pyroxylin coating of the leatherette itself—they become an integral part of that coating which assures permanency, non-fading, and non-tarnishing of the colors. Overtone washes, swabbed on and then wiped off, add to the richness of the ultimate color effects obtainable.

Variety with embossing

The embossing of a design is done with heat and up to 250 tons pressure. Sometimes the leatherette material, in its original thickness, is supported from underneath by an inlay of gray board embossed with a very sharp design, or the leatherette material is first laminated to a

thickness of gray board and then embossed, the extra body in the laminated material supporting the deeprelief detail of the design.

Dies for embossing are relatively inexpensive, even for the extremely intricate deep-relief types of design. Also, they are obtainable in a relatively short period of time; in fact, many dies are already available, particularly for small runs, from among the number of typical designs accumulated by the fabricators of this type of container.

Consequently, full advantage can now be taken of the embossing process to reproduce not only designs to simulate deeply tooled leather but also many other effects of equivalent "prestige" and "quality," such as carved ivory, cinnabar and soapstone, Wedgwood, jasperware, or molded plastics. All these are made beautiful and authentic in appearance and pleasant to touch by deeply embossed third dimensional effects now obtainable and the smooth hard finish of the ultimately exposed surfaces of the design.

Paper-base leatherettes are used more extensively than those with cloth bases, because they are easier to handle, yet have equivalent wearing qualities on the surface and

PACKAGING CATALOG

more than enough tensile strength for the requirements of most boxes or other containers. Further advantages are: clean-cut exposed edges (no threading), no appearance of "oil-clothiness" or "imitation leather," and they can be had impregnated with rubber (latex) to give the material a resilient leathery texture and stretching qualities.

Ease of operation

But appearance and price are not the only reasons for the vastly increasing use of leatherette. The entire process of fabricating leatherette boxes and containers is extremely flexible. It is mostly by hand and involves machine operations to only a limited extent. This lends itself to small production runs at low unit cost as well as larger runs up to 100,000 and more. In the latter, certain operations can be handled in multiple, additional trained crews put on that particular run, and greater efficiency attained through the handling of many consecutive pieces. This results in lower unit costs and amazingly quick delivery.

For example, leatherette can be applied to metal, wood, plastics, and cardboard with the same ease as leather. On metal shells it is applied entirely by machine; consequently manufacturing is relatively inexpensive for larger quantities. Since it is pliable, it can be



manipulated at odd angles, around corners, and into difficult conformations of any kind, and its cloth background makes an excellent foundation for all types of adhesive and glue. On cardboard, leatherette is attached either by machine or by hand; hence it is adaptable to small quantity—as well as to mass production. It gives the small user an opportunity to buy this sales-impelling covering without having to go into bulk purchases of his decorated boxes. As it is basically tough, leatherette makes a cardboard box strong and if the box is carefully constructed, it becomes washable. In this, leatherette is superior to the more absorbent cloth coverings.

Today, leatherette is frequently applied to plastic boxes where it unquestionably adds to their beauty because of the "softness" it lends to whatever it adorns. But it is also highly durable under the stress of wear, and can stand shipment, cleaning, or handling so well that it is frequently used for salesmen's kits and inexpensive luggage. Because of this remarkable durability leatherette is an asset to any form of display box and it bows to its prototype neither for utility nor for appearance.

A glance at the great variety of products embellished with leatherette is all that is needed to convince the casual observer that leatherette is adaptable to innumerable designs and a great variety of treatments. It would appear that leatherette is a worthy and inexpensive competitor to genuine leather and that the use of it will continue to increase for many years to come.

3. Two-piece wood frame box, made with mottled leatherette, involving gold stamping as well as embossing. Center diamond is embossed to quite a depth and inlaid underneath with piece of board to support depth. 4. Two-piece wood frame vanity box with mirror inside lid. Leatherette is embossed in a burlap pattern. Center design is embossed in the material in the same operation, underlaid with piece of board to support depth of embossing. 5. One-piece wood frame box. Sides have been scraped and sprayed in gold to simulate leaves of book. The whole is encased in a book cover simulating real hand-tooled leather. All photos courtesy The S. K. Smith Co.



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Our specialty is high quality wooden merchandising packages. Let our designers show you that an attractive and useful container can be developed to fit your product. STYLED BY QUALIFIED DESIGNERS
MODELLED BY
THURDIGH CRAFTSMEN THE PILLIOD CABINET

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all he

Leatherette and coated fabric materials

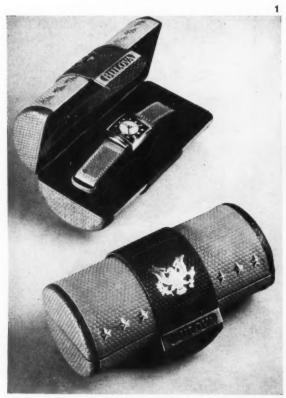
OR semi-permanent and permanent use containers, a group of materials of widely varied appearance, but commonly known as leatherettes, artificial leather or coated fabrics, have long been utilized. They are usually made of a cloth base coated with rubber or pyroxylin, and then embossed. Artificial suede fabrics are coated with latex in which cotton or rayon flock is embedded. Variations in the basic cloth, the coating material and the embossing permit of an extremely wide range of weights, colors, and effects. Within this group, the pyroxylin coated fabrics are, perhaps, the most widely used for packaging purposes. Cotton cloth of various grades provides the principal base material, although the non-woven fibre and paper bases are also used.

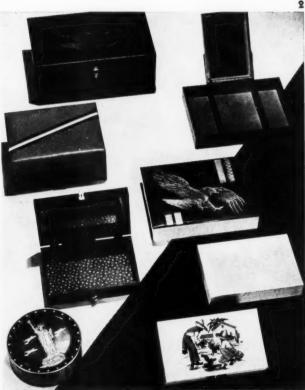
Leatherettes, as their name implies, are available, in the better grades, in a wide variety of authentic leather reproductions as well as novelty grains. The better grades have sufficient coating and sufficient strength in the fabric base to retain the original grain or embossing, when stretched or molded and pasted flat. Fabrics are also impregnated with pyroxylin to retain special fabric

finishes with resistance to wear, exposure, etc., similar to coated materials. The cheaper qualities made with lighter weight coatings and lighter fabrics tend to show 'clothy' and lose their original grain when pulled and pasted. Manufacturers are equipped to supply commercially light fast colors in the better grades.

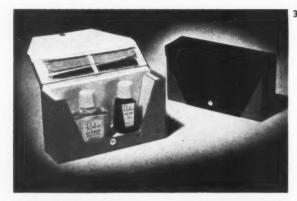
The so-called metallic finishes, made from coatings containing bronze powders, are apt to tarnish and discolor with age. Care should be taken in selecting the adhesive to be used, to make sure that it contains no ingredients which tend to hasten the tarnishing action. The better grade leatherettes are practically free from any residual solvents which would contaminate foodstuffs, but mention of the nature of the contents of the package should be made to the manufacturer of the leatherette, so that he can provide a suitable quality for this specific use of application. Mention should also be made to the manufacturer concerning the use of leatherette for packaging silver or any of the precious metals so that the ingredients used in the coating as well as the dyestuff in the fabric may not cause tarnishing. Addi-

Examples of containers made with coverings of coated fabric. 1. Two-piece cylindrical boxes developed in a military motif to house watches for men in service. Photo Arrow Mfg. Co. 2. Group of boxes which show the many effects that may be obtained with leatherette and fabrics applied to fibreboard or wood boxes. Photo Mastercraft Division, Harlich Mfg. Co.





PACKAGING CATALOG





tionally, where rubber base adhesives are used they should contain no anti-oxidants, for rubber anti-oxidants have a degrading effect on pyroxylin coatings and will discolor leatherette in light or pastel shades.

Leatherettes made on a non-woven fibre or paper base have a distinct advantage over those with a fabric base, in that they can be skived like leather and do not ravel at the edges. They are, of course, free from clothiness when stretched or molded.

Better grade leatherette materials are easily washed with soap and water, and will keep their original beauty because the colors are commercially non-fading and noncrocking.

When used for box making, leatherette may be reembossed with special designs in the box-making plants. Such re-embossing does not necessarily destroy the original grain or embossing. The material may be sprayed or pigmented, roll leaf stamped, or otherwise decorated to create attractive effects.

3. Two-tone effect used for semi-permanent case of leatherette to house manicure preparations. 4. Elaborate boxes with trays, mirrors, moiré linings for cosmetics. 5. Long-wearing leatherette case of the type used for drafting instruments. Three types of jewelry boxes—one which stands upright like a photograph frame, one velvet lined for watches, and the third, heart-shaped and covered with velvet, has tab snap closure. Photos Arrow Mfg. Co.



PACKAGING CATALOG



PETERSON BROS.

Designers and Manufacturers of Novelty Wood Boxes
165 N. ELIZABETH STREET . CHICAGO, ILLINOIS

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he be ise

BEAUTY- QUALITYl'alue impression-





you get all three, —plus RE-USE in SMITHCRAFTED CONTAINERS

They are substantially fabricated of fibre board, wood, or metal frames with applied designs employing the newer leatherette base materials, ingeniously SMITH-CRAFTED to simulate not only rich leather,—but numberless other "quality" and "prestige" effects,—such as fine fabrics with applique designs, carved ivory and cinnabar, worked-metal, and even molded plastic-like reproductions.

SMITHCRAFTED containers are all custom-built to most effectively fit each individual product. The process is extremely flexible, with little restriction on sizes, shapes, colors and designs, without excessive mold or die costs. Practical production in small as well as large quantities, from 1000 to 100,000 or more—WITHIN REASONABLE MERCHANDIS-ING PRICE LIMITATIONS.

If you want a gift package that sets your product "apart from and above" others—that "talks" quality—that enhances "gift-value"—in short a package that will put you into,—or give you a greater share of the gift market—then by all means investigate SMITHCRAFTED containers for your next gift package.

THE S. K. SMITH COMPANY

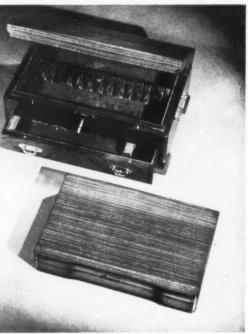
2857 N. WESTERN AVE.

CHICAGO, ILL.

New York Office, 52 Vanderbilt Ave., MUrray Hill 9-8290







Wooden boxes have long been a favorite for silverware and other articles where re-use is a factor. New methods of machine fabrication are making it possible to have many beautiful designs and contours. Photo Pilliod Cabinet Co.

Fancy wooden boxes

by Lawrence Pilliod

ANCY wooden boxes have found a prominent place in the field of packaging. Such containers have a number of features to recommend them: lasting beauty, ruggedness, permanent re-use value, along with an almost limitless selection of finishes.

Since all wooden merchandising boxes are made of either all lumber or veneers, or a combination of both, the manufacturer's first consideration is the kind of lumber needed for the job. A number of cabinet hardwoods are available including gumwood, cedar, walnut, mahogany, oak, sycamore, poplar, and maple. Gumwood seems to be the most generally used because it is easy to finish and lends itself readily to the application of a wide variety of finishes. It is likewise plentiful and inexpensive. Cedar is also widely used because it has more natural beauty than almost any other wood. It is easy to finish and, in addition, gives off a pleasing odor that is generally believed to keep moths away from articles stored in chests made from it. The general appearance and characteristics of the other woods mentioned are well known. They are usually available in reasonable commercial quantities.

It is now possible to make packages from inexpensive wood and have grains of carefully selected rare woods applied to the surface. These expensive-appearing finishes are exact reproductions of a wide variety of richly grained woods that ordinarily are too costly to use in containers for popular-priced merchandise. The basic box is

usually made of gumwood, and the finish is applied by special machinery designed for boxes only. After the necessary sanding operations and application of the required number of preliminary finishing coats, the grains of rare wood are applied. The whole is finally touched off by coatings of lacquer.

These boxes may be lined with various materials to enhance their beauty. The interior may be left unfinished, but with all the linings available—from inexpensive papers through all the list of duvetyns, satins, and velvets in various combinations, along with mirrors and other decorations—it is possible to create almost any desired inside effect.

The relatively higher cost of wooden boxes over those made of other materials is, doubtless, one of the greatest objections to wider use of them. Wooden containers are, however, becoming increasingly popular for packaging for many items of merchandise not ordinarily stored in the receptacle in which they are sold. In such cases, the re-use feature is found in the general public acceptance of a carefully planned wooden container as an accessory for household or office. Obviously, in such instances, its value as a re-use package depends upon extremely careful planning and upon a degree of finish and a quality of design which, together, will make the item appropriate for use with fine furniture. Since most office and home furniture is of wood, the attractiveness of a wooden container invites many applications for re-use.

Pottery containers

F there is any one type of man-made object in the world that has withstood the test of all time, has been used by man of all ages and in all countries—that material thing is a piece of pottery.

Before the dawn of history man discovered that a piece of clay, shaped and hardened by fire, would make an excellent vessel for carrying grains, fruits and water. A thousand years ago the Chinese developed an art of making porcelain which has scarcely been equalled to the present day. The ancient Greeks made pottery

vases that are copied as examples of perfection in form-

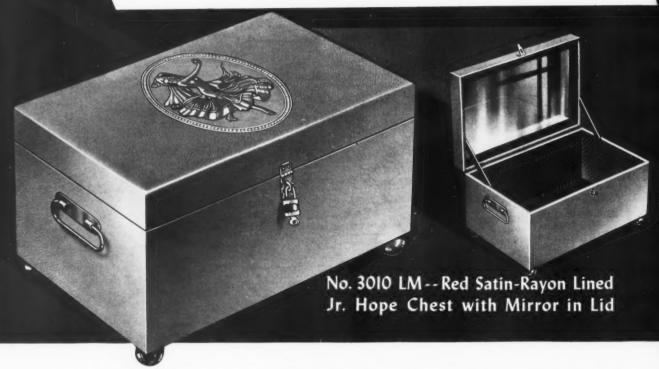
The remarkable thing about all this is that today's pottery packages are not so different in shape from the containers used throughout the centuries. For example, the Coty package illustrated is a copy of the famous Grecian amphora. The liquor jugs are not unlike old wine jugs used in Europe before the Middle Ages. The McKelvy jugs are similar to those found in the tombs of the Pharaohs. The Cresca jars are pat
(Please turn to page 248)

1. Types of pottery containers used for packaging. Those on the top and second row are used for many kinds of foods, liquor, cosmetics, drugs, chemicals, etc. On the third and bottom row are various types of cheese jars, novelty containers and containers suitable for cookies. Three jars on the bottom row have patented press-clamp closures. Main feature of pottery for consumer packaging is its lasting appeal. It is rarely ever thrown away. Photo Robinson Clay Product Co.



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PACKAGING



COMBINES STRONG GIFT APPEAL WITH PRACTICAL RE-USE VALUE

A Harlich package clothes your product in the rich beauty of deeply embossed and decorated leatherette. The wide range of colors, textures, and embossing possibilities permits us to create a truly individual package to fit your product. What is more, sturdy construction gives Harlich packages a long re-use period which results in sustained advertising for you. Let us show you what Harlich designers can do for your product. Tell us what your packaging needs are and we will gladly submit a sample.

HARLICH MANUFACTURING COMPANY

Vo.

ine







Jacal For . . . Cakes, Candy, Cigarettes, Cigars, Tobacco, Cookies, Cordials, Glace Fruits, Cosmetics, Haberdashery, Gloves, Hosiery, Lingerie, Perfumes, Jewelry, Toilet Soap, Toilet Water, Liquers, Wine, Whiskey and many other products . . .



No. 165 Tray Vanity



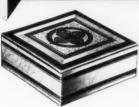
No. 7035 Hinged Lid Box



No. 145 Roy with Mirror



No. 7036 Hinged Lid Box



No. 7033 Hinged Lid Box



Vanity Box with Mirror



No. 3010 Jr. Hope Chest



Round Mirror Box



No. 135 Box with Mirror



Mother's Day Box

1401-1417 W. Jackson Blvd., Chicago, Illinois



terned after food jars found in early American homes. The forms of the Vendome cheese jars are made like old French soup pots with covers.

This similarity between old and new is not strange. The revival of interest in pottery during the past few years has been largely in the luxury goods field, for packaging where attractiveness of the package and reuse features of the container are of greater consideration than such features as cost, shipping weight and indestructibility. In their search for something out of the ordinary, package designers have taken renewed interest in the beauty of an old pottery vase, the quaint crudeness of an earthenware jar, the delicacy of a porcelain flacon. Such objects adapted for modern packaging have unusual eye-appeal in fancy gift lines. Modern factory methods of making pottery in this country have increased production and made available containers with protective features suitable for packaging.

Modern pottery is adaptable for the packaging of a long list of foods, condiments, spices, cosmetics, liquor and wines, chemicals and drugs. In the classification of utility packages, large pottery crocks are used extensively by the dairy industry for the shipment of cottage cheese and butter in bulk. Pottery is an essential for certain chemicals. Many of these chemical containers look like the old-fashioned jugs used for vinegar and cider. Mercury and iodine resublimed, for example, have been packed in earthenware containers for years. Such chemicals require containers which are resistant to all elements in their composition. This often eliminates the use of containers made from other materials.



Shortages and priorities on packaging materials also put pottery in the limelight today. In England and in Europe, many packagers are using pottery as a substitute. English potters have made an acid-proof chemical stoneware which is being pushed in place of metal. Many packagers in this country have given thought to pottery as a substitute. It can be used, yes, but not without certain limitations. In the first place, for some purposes it is more costly. Like glass and metal containers, certain factors in its manufacture are restricted. Many chemicals are necessary for the body of the clay and for the glazes. These are required for color and protective features. Many of such chemicals are on priority lists. Many of the companies capable of catering to a mass market for pottery are also working on defense orders which require earthenware, stoneware and porcelain. This naturally cuts down civilian orders and causes delays in deliveries.

For those who contemplate the use of pottery containers, a clear understanding of the terminology of this medium and a few pointers about the technique of manufacture may be helpful.

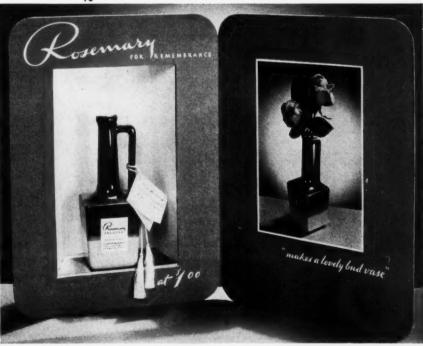
The word "pottery" is derived from the French poterie and includes all objects made from clay. The terms earthenware and stoneware are used almost interchangeably for various processed forms of pottery.

7. Jugs for men's toiletries patterned after pottery found in tombs of Pharaohs. 8. Food containers patterned after pottery found in Early American homes. 9. Eau de cologne in a container shaped like a Grecian vase. 10. Re-use appeal of pottery featured in a display for cologne.









PACKAGING CATALOG

The term porcelain should be applied only to well-marked varieties of pottery which are obtained by certain treatment of the clay mixed with chemical properties which give to them a translucent quality. Porcelain was brought to Europe from China. It was first made in Europe by the alchemists of the Middle Ages, who after years of trial developed a composition similar to that which came from China, although for years they barked up a wrong tree by assuming that Chinese porcelain gained its translucent qualities because of a mixture of clay with glass. Ceramics is derived from the Greek word, *keramos*, meaning potter's clay, and is the general term applied to the study of the art of pottery.

The color of a pottery container is dependent, first, on the locality from which the clay is derived; second, on the composition of the body; third, on the method of firing. The quantity of iron in the clay, for example, definitely affects the color. Good clays are found in too many parts of the United States to be mentioned and American pottery and porcelain today are among the finest in the world. Glazes and slip clays are used to provide the containers with added protection as well as decoration. Varnishes and lacquers are used for further decorative treatment. Color possibilities are limited by the temperature at which the color needs to be fired. The ancient Chinese, for example, made wide use of cobalt, the only substance known to them which would stand the high temperature needed to melt their glazes. Certain brilliant colors cannot be maintained in pottery that is fired at high temperatures. Such firing, however, is often necessary to give the pots the required vitreous protection for certain kinds of packaging. This is an important point to consider when selecting a pottery container. If your product must be moisture-proof, you may not be able to use the brilliant colored pots which serve in instances where a high degree of protection is not required. Fired pots without glaze or with very little glaze are nearly always porous and sweat. That is the reason why cheeses are particularly well suited for packaging in this type of pottery. They age better in a pottery container. Many unusual color and decorative effects are obtained only by a series of firings. These additional firings, of course, add to the cost of a container.

Closures for pottery containers include pottery lids, sealed on with various types of adhesive tapes, patented press-clamp lids, like the Kaukauna cheese jar, corks, combination cork and plastic, cork and wood, cork and metal, etc. Over-seals of viscose have been used most satisfactorily for these modern packages and are available in a wide variety of color effects.

The main feature of pottery for consumer packaging is its lasting appeal. If well modeled and designed, it is rarely thrown away because it has so many secondary uses. It helps to sell the product and reimburses the packer many times for its extra expense.

The modern pottery factory is equipped to figure on each packer's problem to determine costs, colors, shapes, design and economical manufacture. If you are interested in using pottery, you would do well to put your proposition clearly before a good pottery maker.

11., 12., 13. Huge pottery jars for chemicals, which require containers resistant to all of the elements in their composition.



250





PACKAGING CATALOG

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PACKAGING CATALOG

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Molded pulp containers

OLDED pulp containers are made from reclaimed or new fibrous paper pulp, combined with binders of certain chemical formulas or plastic resins. The paper pulp may be a mixture of sulphite and kraft. Its degree of strength is dependent upon the amount of kraft used in the mixture. They are cast from molds of bronze or other metals, previously made from plaster models of the desired shapes.

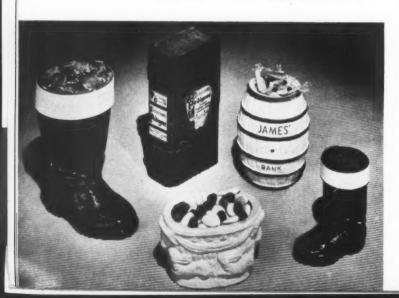
Molded pulp has been used extensively by the poultry industry to protect eggs from breakage during shipment. Millions of molded pulp and pressed pulp pie plates are used annually in the baking industry. These are made with dies and plungers, and are limited to a dish-shaped unit. Another important use is for the protective sleeves used over bottles of liquor. In more unusual shapes, molded pulp, made by the blown method, is used widely for making decorative novelty containers for candy, lingerie, hosiery and all manner of dry merchandise for which an individualized container provides striking counter display. Some 10,000,000 molded pulp units like the pumpkins seen on candy counters, were sold in chain and syndicate stores in 1940. Custom-made molds are also important for trade mark identity.

Molded pulp containers have many advantages: (1) They are light in weight, (2) may be seamless because two halves can be molded in one piece, (3) are crush resistant and (4) offer excellent opportunity for distinctive design and individuality of shapes.

The two important processes for making molded pulp containers are as follows:

1. **Suction method:** This process is used for mass production of the flat dish types of containers such as egg containers and pie plates. The molds, drilled with

Molded pulp containers are used for a great variety of dry merchandise, such as wrapped candies, hosiery, lingerie, etc. An important use is for the protective sleeve over bottles of liquor. Photo Pulp Reproduction Co.



holes, are attached to the spokes of a rotary conveyor. A fine screen fits over the outside of the mold. As these molds move around the conveyor they are submerged into vats of the pulp mixture. By suction the required amount of the pulp mixture to make the container is lifted from the vat against the screen and pressed by male and female dies. The mold then moves on; the completed container is finally removed from the mold and put through the dryers. The complete operation is automatic and it is possible to make large quantities with great speed and at very low cost.

2. Blown Pulp: Molded pulp containers like the boots, barrel, liquor bottle sleeve shown in the illustration are not made with dies and plunger but are made by the blown pulp method. A bronze shell or cavity drilled with holes is lined with a metal screen made in the same shape as the shell. By gravity the pulp mixture fills this cavity and by air pressure is forced against the screen within the mold and is also dried by super-heated air. When the unit molded is dried sufficiently, the mold opens automatically, the unit is removed and passed along on a conveyor for further drying. After that the container is ready to have decorative effects applied. Production is about 20,000 a day.

Decoration

Color effects may be achieved by dyeing the pulp material to the desired shade or by applying color with a brush or spray. The containers may be lacquered to provide a high glossy luster. Lettering and trade mark designs may be incorporated at the time of molding by embossing or debossing. Labels may be affixed later.

Molded pulp containers such as those illustrated are obtainable in stock molds. When an unusual design is required, an individualized mold may be made. Bronze molds may be made on the average from \$150 to \$500.

New developments

Many new uses and developments of molded pulp may come as the result of material shortages during 1942 due to the emergency economy. Reports are that experiments have been conducted to develop paper pulp as a substitute for cork. Molded pulp protective pieces to protect corners of furniture during shipment have also been used successfully in place of corrugated materials. They are easy to handle because they can be made in the exact shape required.

Another recent development is a molded pulp product carrying a synthetic resin content, reputed to have all the advantages of plastic molding compounds plus greatly increased strength and latitude in color and decorative effect. Eventually this material may have a part in the packaging picture.

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Tin cans and packages

VERY day the people of the United States open, discard and replace about fifty million tin cans. Some thirty million of them are food packages. The rest protect contents ranging from aspirin tablets to motor oil, from house paint to movie film, from tooth powder to shoe polish. Altogether, they encompass the nation's economy, and the influence upon this economy of 18,000,000,000 tin cans a year is quite incalculable. But such numbers as these (whatever pleasure they may give to the statisticians who dig them up) are of no especial value to manufacturers with goods to package. A manufacturer wants to know how a particular container can go to work for him, and the single purpose here is to provide an informative primer on the tin can.

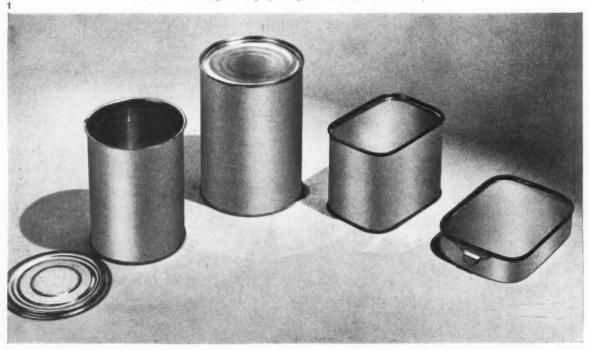
Most striking, and perhaps most familiar, is the fact that the tin can is not a tin can; it is a steel can. Usually it has a coating of tin, inside and outside, about one-fortieth the thickness of a human hair, and comprising a little more than one per cent of the total weight. The basic function of this lustrous film of pure tin is to prevent external rusting and possible chemical action within after the can has been filled and sealed. In addition, steel plate without a coating of tin is hard to solder; and at production speeds normally exceeding three hundred cans a minute for each line in operation, the side seams would not always be tight.

In packaging many products other than sterilized food, however, it is desirable to employ lacquered steel plate or terne plate. Lacquered plate, known also as black plate, is sheet-steel coated with lacquer or enamel instead of tin, and it may be used for dry products which do not require containers with soldered side seams. Special coated manufacturer's terne plate is the same sheet-steel, coated with an alloy of tin and lead. Less expensive than tin plate, it is used only for non-edible products—paints, solvents, oils, greases, waxes, etc.

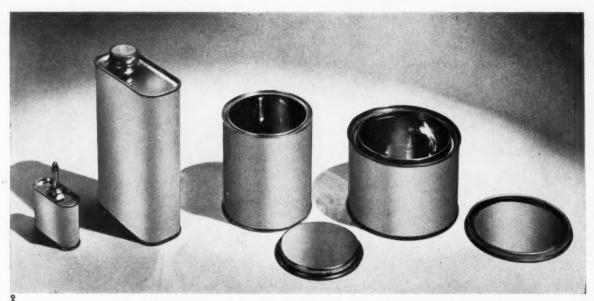
Tin plate, lacquered plate, and terne plate are all produced in various thicknesses or weights and the size of container required in a large measure determines what thickness of plate should be chosen for fabrication. Frequently the phrases charcoal plate and coke plate appear in specifications. This terminology goes back to an earlier day, when charcoal-smelted iron was of a higher quality than iron smelted in a coke-charged furnace. But in modern usage charcoal plate simply means sheet-steel with an extra heavy coating of tin; it is often specified when the containers are to be subjected to heavy oxidation. Coke plate now means the identical sheet-steel with a relatively light coating of tin; this is the standard tin plate of commerce.

It is, of course, a truism that every kind and variety of product by its very character picks its own particular

 Cans for processed foods. At left, standard round can as supplied to the processor. At center, round can with top seamed on, ready for labeling. Right, rectangular can as used for asparagus and flat rectangular key-opening can as used for sardines, etc.



PACKAGING CATALOG



 Cans for non-processed liquids. From left to right: oil can with extension spout closure; can with screw cap; can with single friction plug; can with triple friction plug.

package. And it is no less a truism that the can-manufacturing industry is able to fabricate this package—in many cases improving upon the original drawing, and not infrequently anticipating the future. But since literally tens of thousands of products are packaged in cans, full demonstration of the adaptability of this container would far exceed the bounds of this article. Therefore, the following descriptions will be confined to broad principles.

Packers cans

Containers used for foods and beverages that must be heat-sterilized after they have been hermetically sealed are known as packers or sanitary cans. They are almost universally fabricated of tin plate, and in addition many of them have internal coatings of lacquer or enamel to prevent discoloration to container or contents, which might occur with certain kinds of foodstuffs. The technical research departments of the various manufacturers have determined what type of inner surface is best suited to each kind of food, and they are constantly at work improving old formulas and developing new ones. These research departments invite consultation and their laboratory experts eagerly attack the diverse problems presented by packers.

The cans used for heat-processed foods are generally cylindrical. This is the "natural" shape, in that it provides a body capable of the most uniform resistance to pressures and strains; furthermore, the manufacture of cylindrical cans is much faster, thereby making possible high-speed production with all its attendant economies. The most commonly used cylinders vary in diameter from $2^{1}/_{8}$ in. to $6^{3}/_{16}$ in., and in height from $1^{1}/_{8}$ in. to $8^{3}/_{4}$ in. Packers are free to choose from among dozens of standard bases or diameters,

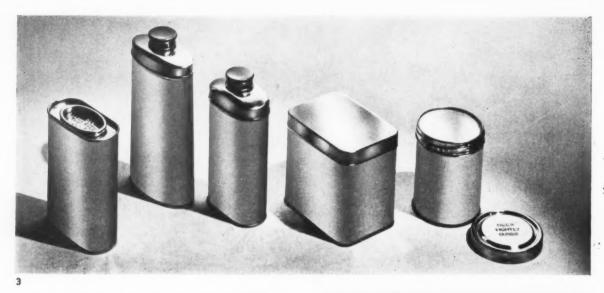
while heights are a matter of individual preference.

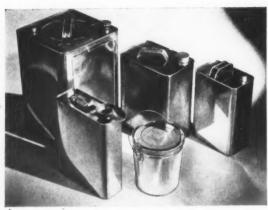
Many processed foods, either because of inherent characteristics or consumer preferences, reach the pantry shelf in cans of other shapes. Familiar forms are the short oblong sardine can; the tall oblong asparagus can; the flat elliptical container for kippered herring; the oblong tapered can in which corned beef is often packed; and all the irregular cans built to conform to hams, tongues, whole chickens, and similar delicacies.

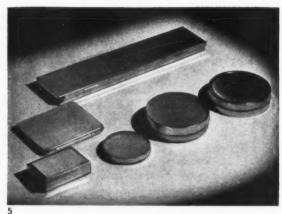
As every packer knows, the canning of foods has developed over a period exceeding a century from the crudest experimentation to a precisely governed art. Today there exist for each one of the three hundred and more commercially canned foods exact knowledge and complete mechanical equipment, from the can factory through the filling, sealing, pressure-cooking, and cooling plants. The net result of this complex art is that every canned product reaches the kitchen not only completely prepared, but retaining a far higher vitamin content than is ordinarily possible with foods that have not been cooked in hermetically sealed containers. In consequence, the American nation as a whole eats a greater volume and variety of high-quality food than any other people has ever been able to procure or afford to buy.

Manufacturing operations

The fabrication of cans, which began about 1810 in England, was at its inception exclusively a hand process. Today, for some products, a few operations are still manually performed; and, indeed, certain highly specialized containers have always been most successfully produced without the aid of machinery other than hand tools. Yet modern can-making is so largely mechanized that an outline of the major operations, chiefly automatic, will come close to telling the story. Step by step,







Containers for dry product showing various types of closures which may be utilized.
 Large containers for liquids equipped with sheet metal handles, wire handles, pouring spouts, etc.
 Seamless boxes and cans for shoe polishes, pills, sets of paints, etc.

a description of the manufacture of packers cans follows:

- Slitter: Revolving knives cut the sheets of tin plate to the desired size.
- 2) Body Maker: Takes the cut body-blank and forms it into a cylinder; shapes, closes, "bumps" and solders the side seam on the outside.
- Flanger: Expands or flanges the top and bottom of the body.
- 4) Double Seamer: Attaches "factory end," or bottom, to bottom edge of body with a rolled seam.
- 5) Tester: Under air pressure, detects leaky cans and automatically rejects them.

The ends of the cans are formed by the following machines:

- Slitter, or Scroll Shears: Cuts the tin plate into strips. (Often the edges of these strips are scrolled to reduce waste.)
- 2) Press: Blanks out and forms the end of the can.

- 3) Curler: Curls or bends the edge of the end, thereby facilitating the seaming operation when the end is joined to the body.
- 4) Compound Applier and Drier: Presses a ring of liquid gum around the edge of the closed end of the can to assure an air-tight seam.

General line cans

Broadly speaking, the description general line is applied to all cans and packages for contents other than foods cooked after sealing. Thus general-line containers would be used for such diverse contents as salted peanuts and denatured alcohol; for talcum powder, rubber cement and pipe tobacco; for printing ink and potato chips; for paint and for varnish; for film developers, for olive oil, and for syrup; for surgical bandages, tennis balls baking powder, lozenges. The field is literally endless, and every year sees scores of new products going

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An exclusive method of mixing, melting and tempering the metals.



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PACKAGING CATALOG

into general·line cans of as many shapes and variations.

If the can is designed to hold a liquid, naturally the sides must be soldered and the ends compound-sealed. On the other hand, the packages for such things as drugs, tobacco, spices, crackers, and most other dry products do not demand absolute tightness, and for these a mechanical sealing suffices. There is also a shallow container, for such contents as aspirin tablets and shoe polish, in which body and bottom are formed from a single piece of tin plate; this kind is known as the seamless can.

A few products very extensively used are found under the general-line classification even though their containers are functionally closer to being packers cans. One of these is the vacuum can used for packing coffee so that its flavor may not be spoiled by oxidation through contact with the air; as with packers cans, the sides are soldered and the ends compound-sealed. The other most notable example is the beer can, which, regardless of structural variations, is in every respect a packer's canfor not only is it hermetically sealed, but its contents are heat-processed after closing.

Can closures

Most common of all closures is, of course, the one used on packers cans. When the unfilled containers arrive at a packing plant, they are accompanied by separate flat tops, exactly like the "factory ends" already attached by compound sealing. After the cans have been filled, these "packers ends" are double-seamed into place, thus providing the hermetically sealed food packages of everyday commerce.

Other types of cans have their own characteristic closures, which vary according to the nature of their contents, to trade habits, and to consumer predilections.

Liquid containers, for example, are generally equipped either with screw caps, pouring spouts, or with one of three types of friction plug. These plugs are circular and are designated as "single friction," "doubletite" and "tripletite." As their names suggest, they have, respectively, single, double and triple contacts with their corresponding containers.

Containers for dry products have a greater variety of closures and, as with liquids, the choice of any particular cover is dictated in part by appropriateness, in part by



- 6. Beer cans. Left to right: flat top; cap-sealed quart; cap-sealed 12 oz. and seamless cap-sealed.
- 7. Easily opened tin for aspirin which dispenses with wire hinge. Top is held to the bottom by an embossed metal spot.
- 8. Finger pressure at front corners facilitates opening of another container for aspirin. Cover is held by wire hinge.



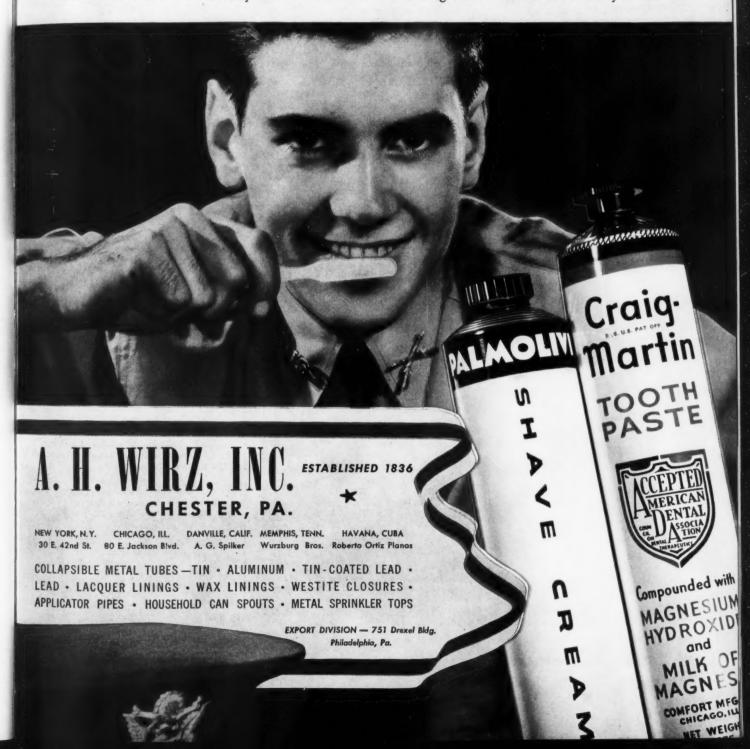


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WIRZ TUBES provide Protection for the life of the product * *

Not only is the product protected from atmospheric action, but packaged in uniformly well-made WIRZ Tubes — it can be dispensed practically without waste.

This wasteless dispensing—when multiplied by the millions of WIRZ Tubes in use—is a true aid to conservation in a war economy and to convenience and sales good will—now and in the years ahead.



trade practice, in part by the preferences and prejudices of the public.

The closures most used are the slip-on, hinged, slide, and screw covers; the single-friction plug; and the dredge tops so familiar with ground and powdered contents. Tooth powder and talcum powder usually are packed in cans having necks with perforated tops and slip-up, slip-over, or slip-off caps. The perforations vary in size according to the contents, and the amount of powder to be poured may be controlled by the extent to which the cap is slipped away.

A somewhat more elaborate closure is the lock top, suitable for cylindrical cans, which combines interrupted threads and dimples at the top of the body and around the skirt of the cover. An optional supplement to this type of cover is a paper seal curled into the top edge of the body to afford even better protection against the intrusion of dirt.

Cans for beer have two kinds of closure: the flattopped can is sealed, as are processed-food cans, by double-seaming; two varieties of cone-top cans, one with the conventional side seam, the other seamless, both take the crown, or cap, seal. Motor oil, another product that has gone increasingly into cans, is usually packed in flat-topped containers and closed by double-seaming. This package has the advantage of being tamper-proof, thus insuring against substitutes and short measures.

The U. S. Army uses round, tin-coated cans, size 300 × 308, for packaging its Field Rations, types B and C. The C ration is a cooked recipe of meat or hash—there are three classifications. The B ration is a dry pack, consisting of three paper-wrapped lumps of sugar, a square of confection, a small tin of coffee, dry biscuits, and a metal to open the C can. Round cans were specified by the Subsistence Research Laboratories of the Quarter-masters' Corps because, although square or oblong cans are easier for the soldier to pack and carry, there are not enough packing and sealing machines in the country to handle the estimated number of cans the Army needs.

The selection of this type of container is the result of many tests—experimenting with the weight of sheet, the heaviness of the tin plate, etc. Cans are of the key-opening type—scored by either three-line or herringbone methods to give all suppliers an equal opportunity to bid on Army requirements.

Volume Tabulation of Popular Can Sizes and Typical Packs Including Those Listed by Division of Simplified Practice, National Bureau of Standards

Can Name	Can Size	Typical Commodity	Capacity in Ozs. Avdp.	
5 Z	202 x 214	Baby Food	4.85	.236
6 Z	202 x 308 202 x 309 208 x 109 208 x 208	Baby Food Baby Food Potted Meat Potted Meat	6.08 6.2 4.9 5.5	.296 .302 .238 .268
8 Z Short	211 x 300	Soups, Fruits, etc.	7.93	.386
8 Z Tall	211 x 304	Soups, Fruits, etc.	8.68	.422
No. 1 Picnic	211 x 400	Soups, Fruits, etc.	10.94	.532
No. 211 Cyl.	211 x 414	Juices	13.56	.660
No. 300	300 x 407 300 x 408 300 x 409	Soups, Baked B., Tom. Juice Spag., Baked B., Tom. Juice Dog Meat	15.22 15.4 15.7	.741 .749 .764
No. 1 Short	301 x 400	Fruits	14.02	.682
No. 1 Tall	301 x 411	Salmon	16.70	.813
No. 303	303 x 406	Peas and other Vegetables	16.88	.821
No. 303 Cyl.	303 x 509 307 x 113 307 x 201	Vegetables Tuna Fish Salmon	21.86 7.0 8.3	1.064 .341 .404
No. 1 Flat	307 x 203 307 x 306 307 x 400	Salmon Vac. Vegetables Baked Beans	8.89 14.7 17.8	.433 .715 .866
No. 2 Special	307 x 408	Fruits, Vegetables	20.25	.985
No. 2	307 x 409	Fruits, Vegetables	20.55	1.000
No. 2 Cyl.	307 x 509 307 x 510	Fruits, Vegetables Fruits, Vegetables	25.44 25.8	1.238 1.255
No. 11/4	401 x 205.5 401 x 207	Salmon Salmon	13.14 14.3	. 639 . 696
No. 212	401 x 411	Fruits and Vegetables	29.79	1.450
No. 3	404 x 414 404 x 700	Fruits and Vegetables Juices	35.08 51.6	1.707
No. 10	603 x 700	Fruits and Vegetables	109.43	5.325
No. 1 Square	300 x 308 x 308	Asparagus	17.27	.840
No. 21/2 Square	300 x 308 x 604	Asparagus	32.47	1.580

Can dimensions are expressed in the industry by the three-digit figure. The first digit represents unit inches and the second and third digits represent the fraction of an inch expressed in sixteenths. Thus the No. 2 can, $3^{7}/_{16}$ in. in diameter, is described in this system as having a diameter of 307, while the height, $4^{9}/_{16}$ in., becomes 409. The dimensions given are approximate.

In the table at left the "No. 2 can equivalent" indicates the number of No. 2 cans equal to each of the cans designated in Column 1. The No. 2 case equivalent may be obtained by dividing the number of cans per case of the can to be converted by 24 and multiplying the result by the "No. 2 can equivalent."

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Recipes from the old South...plus overseas ideas such as inspired F.F.V. Shortbread... might have limited the activities of the Southern Biscuit Company to its immediate territory.

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CROWN CAN

INDEPENDENT AND HELPFUL

Can decorating processes

by C. P. Adamshick

N the highly developed science of packaging for which America is famous, there are few processes so fascinating in their execution and so breath-taking in the final results as the one achieved by the metal lithographer.

This skilled craftsman has made such remarkable progress in the past twenty years, that the better factories producing lithographed metal containers now offer their customers creations so beautiful that it is hard for the layman to understand how they can be produced at such reasonable cost.

Mechanical and chemical genius have combined to make this process of metal lithography the servant of man which it is today. On the mechanical side complicated machinery has been developed in the true American tradition, which does its intricate job with precision. On the chemical side are the fine inks, lacquers, and varnishes which have been produced in ever-increasing perfection throughout the United States since the last World War. Through the combination of all these factors the decorators of tin and metal have made progress.

A visit to a factory where finely lithographed cans and other decorated metal containers are produced shows off the wonders of this new branch of science.

To follow the process in order, the visitors go first to the design room where a staff of artists are sketching the working drawings. These are at once a fine piece of art in black and white and a carefully executed plan measured with mechanical exactness. The layout must

1. Cookie tin lithographed in a military design of intricate pattern and clear colors. Photo Continental Can Co.

show the center of the various panels to be made up in tin, with all the spaces necessary for hooks, beads, spins, soldering, and the numerous other details that must be accounted for in producing a metal blank for cans.

Accuracy in designs

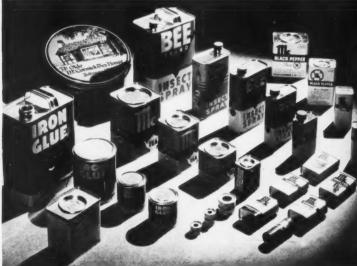
All of the various complicated factors must be in their proper place, and of the proper size in relation to the finished product. On his plan the artist must locate the design which is to be the final decoration of the metal container. Every line must be in its proper place and arranged to avoid, if possible, any intricate matching along the edges that are to form the side seam.

Once the layout has been made, it is enlarged by camera and the artist then proceeds with the final black and white drawing, using the photograph as a guide. When the drawing is completed the camera reduces it to its proper size, and prints are made, which are placed in the working layout.

A third set of photographs produces negatives of the working layout. A separate negative is produced for each color that is to be used in the final decoration and the artist lays out on each negative an individual design for the color it is to produce. Press plates are made from these final negatives. These plates are of zinc or aluminum which has been carefully cleaned, treated with a sensitizing solution, and dried by electric heat.

2. Variety of cans showing possibilities for decoration and accuracy of reproduction. Photo American Can Co.





PACKAGING CATALOG





DRAMATIZATION Modern sales-psychology says, "Use pictures to project ideas." No wonder then, that smart package designers are turning more and more to the pictorial motif to sell the product in the container.

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But correct design is only the beginning of successful packaging. Perfect reproduction is also essential. The craftsmanship of Continental engravers, masters of the art of lithographing on metal, is your assurance of excellence no matter how intricate the design.

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Reap the fruits of our specialization in more economical and satisfactory small and medium sized tin containers.

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PACKAGING CATALOG







3. Can decoration frequently permits the conversion of the container into a re-usable toy or household accessory. Photo National Can Corp. 4. Multicolor lithography on drum-type metal box covers and economical use of single color for bases provides attractive effect. Photo George V. Clark Co., Inc. 5. Designs for drawn-type seamless cans may run around the full circumference of the container since no allowance need be made for the customary seam. Photo Crown Can Co.





6 and 7. Gift containers are often elaborately lithographed with as many as eight to ten colors. Carrying handles may also be in color. Box in lower picture has hinged, extension edge lid. Photo Owens-Illinois Can Co.

The impressions are transferred from the already prepared negatives to the sensitized metal plate by a simple application of photography and etching, and the plates resulting from this process are the ones from which the final decorations on metal are printed.

Printing is by offset

Anyone who has visited an offset printing plant will be familiar with the process used to transfer lithography to metal. The press has three cylinders. The printing plate is placed in the topmost cylinder. There is a rubber blanket on the middle one and the lowest cylinder is set to apply a pressure.

The ink, which is fed to the machine from a fountain by rollers, is spread over the plate on the first cylinder and thus transferred to the rubber blanket on the middle roller. The metal sheet is then passed between the middle and the lowest rollers and takes the design from the inked rubber roller.

The decorated sheet goes from the printing press through an oven which bakes and dries the printed impression. A similar process of printing and baking must be repeated for each separate color which appears in the final decoration on the container.

Sometimes the lithographer coats his metal container with a plain white or plain colored surface before starting the printing process. This coating is applied by machine and is baked on the metal before the printing process is begun.

Lacquers are often applied to tin plate to protect the inner surface of a container from corrosive action by acids and other chemicals in fruits and vegetables, or from the effects of cooking a food product in the closed container. Varnishes are applied over coatings or printed surfaces to give toughness, protection and lustre.

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PACKAGING CATALOG

HE most adaptable metal for vials is aluminum. Under normal conditions the domestic product is easily obtainable; it can be produced to order in a short period of time, and it offers many advantages both to the producer and to the consumer.

Properties of materials

The specific gravity of aluminum is 2.56, which compares favorably with that of glass—2.6. The metal is so tough and hard that a comparatively thin wall in a package affords sufficient protection to the packaged article. There is no breakage problem and outside packing is simplified for this reason.

Acceptance by the general market has been retarded through a lack of understanding, on the part of manufacturers, of their many advantages. These vials are now being developed and should soon find an important place among the package engineer's tools.

A glass package containing one-half fluid ounce without its heavy protective wrapping weighs approximately 10 lbs. to the gross. An aluminum vial, to hold the same quantity, weighs approximately 11/2 lbs. to the gross and the aluminum package requires only half the space for packing and storage. Aluminum is a good conductor of electricity. It can be easily worked and shaped after initial forming; it can be annealed to a soft condition, and will hold its softness after cooling. These properties make aluminum extremely valuable for industrial uses where a soft, tough container is required.

This type of package can be made moisture-proof and it is resistant to light. Improved manufacturing methods now assure that the cap screws on and off smoothly and makes a good closure.

Material packed in this aluminum metal occasionally becomes discolored from the friction against the walls of the container. This objection can be overcome by first inserting a wax paper lining or by spraying the inside.

Cylindrical aluminum vials showing variety of sizes, types of construction, adaptable to many different purposes.

Many shapes available

Basically, aluminum is drawn or extruded in straightsided, cylindrical forms. As this metal can be easily spun, special packages can be made to fit many specific purposes and adapted to many uses.

The sizes which have been most popular from the viewpoint of competitive costs run from $^3/_8$ to $^11/_2$ in. in diameter, and 1 to 7 in. in height Larger sizes are entirely practical and wait only for a reduction in the basic cost of aluminum, which is probable, and an increase in the efficiency of production, which is still extremely low.

Where costs are a secondary consideration, square, octagon, and bottle shapes can be supplied. Because of the ease of shaping, aluminum offers endless possibilities in combination with glass and plastics.

Methods of production

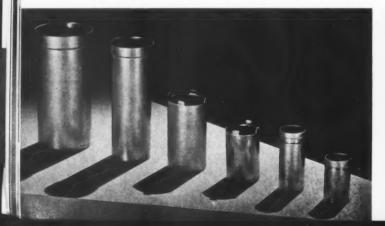
Extrusion offers the best method of production under prevailing conditions. The set-up time is short and the working tools are comparatively simple. In combination with offset decorating, as developed for collapsible metal tubes, small and medium-sized orders find an equally welcome acceptance with the large runs.

In the extrusion method, a single package is completely formed from a single slug. The package is then trimmed for proper length. By varying the thickness of the slug, packages of different lengths can be produced on the same set of simple tools.

Drawing: Strip metal is used in this process and the package is developed by a series of forming and ironing operations. Many tools are required; set-up time is much longer than in the extrusion method, and the packages are all of one length from any one set of tools.

Wear on tools is much greater in extrusion. The finish of a drawn vial is superior to that of an extruded package as the surface of the latter shows horizontal scratches from the extruding operation.

Decorated aluminum vials. Lithography may be applied directly to the metal. Photos Victor Metal Products Corp.





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PACKAGING CATALOG

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The method of operation chosen for a specific package will depend on its size, quantity required, and the speed needed for delivery. Where a package must conform to a specific shape, it is frequently made by spinning. An undercut in the body of a vial cannot be either extruded or drawn. A revolving wheel or similar object is placed against the package and the proper shape is thus obtained.

Labeling

Decoration of aluminum vials offers many additional advantages. A base coat of enamel is first applied by offset lithography, followed by the decoration which can have as many as four colors. This label is permanent. There is no danger of its falling off and causing any mistake about the contents of the packages. Oily substances from within the package or from a neighboring container would not affect it. Counterfeiting becomes much more difficult. If desired, the usual type of paper label can be applied.

Cost

As compared with articles made of competitive materials, this type of package is slightly more expensive in the smaller sizes and the difference in cost becomes more pronounced as the size of the container increases. To offset this, however, is a great saving in freight charges, because aluminum weighs relatively little, is not breakable, and requires a small amount of space. As production facilities improve and the cost of aluminum is reduced, the difference in cost will be appreciably lessened.

Present uses

Pharmaceutical: Leading pharmaceutical houses have been using aluminum vials to great advantage. The notable savings in weight and breakage make this type of package ideally suited for exporting to foreign countries.

The smaller sizes and sample packages have been found ideal as they can be conveniently carried in the purse or vest pocket without danger of breaking.

Cosmetics: One firm had marketed for years a product which had become known by the outer packing. A new liquid was developed which would improve the regular product. An aluminum vial was found ideal for the company's purpose because the labeling could withstand the oily liquid and the smaller amount of space required by the metal vial allowed the item to be packaged in the same outside container. As this product is rather expensive, breakage was a very important factor. The metal vial was guaranteed against this. Essential oils have long been sold in aluminum bottles.

Industrial: One of the fastest growing divisions of the illuminating industry is fluorescent lighting. One part of this particular light requires a vial with prongs at the top which can be bent over and can serve as an electrical conductor. Aluminum has proved to be the ideal metal for this purpose.

The radio industry has been using for a great many years aluminum condenser shells.

These and many other advantages show that aluminum vials should find ever increasing applications throughout the entire packaging field.

Specialty metal containers

CLASSIFIED as specialty metal containers are two distinct types of boxes: 1) the covered and lined metal form; 2) the metal form without either covering or lining, but with various metal finishes.

In recent years, brass, aluminum, and steel were the principal metals used in the manufacture of specialty metal containers. Today, wartime priorities have cut drastically into the available stocks of these metals and many manufacturers of consumer goods are perplexed regarding the type of containers in which they may now market their products.

To such manufacturers it is safe to say all is not yet lost! While aluminum is practically out and brass not plentiful, steel is still to be had for essentials.

Variety in covered boxes

Boxes to be covered and lined are made in a form of sheet steel which may be covered with a variety of materials. The most popular covering is leatherette, which is washable and will wear better than leather itself. Leather, velvet, rep, or other fabrics are also used. The linings are usually silk, rayon, or velveteen. A wide variety of colors and styles is possible by the use of different materials for coverings, linings, and decorative features. High grade materials are necessary to withstand the stress of mass production methods. Coatings of brilliant lacquers, fancy and plain edges of enamel, brass, or chromium add to the attractiveness of the display. The result is a sturdy package which will stand up under abuse over a long period.

A distinctive feature of these packages is a spring hinge which works automatically to hold the cover either wide open or tightly closed. The contents are held firmly in position when the box is closed. When on display each box will hold its cover open at an angle of 90 degrees.

This type of display is particularly adapted to articles



HERE'S much to be said for the appropriate designing, rich color lithography and practical advantages which "NATIONAL CAN" develops to accent display and consumer acceptance. * Consult "NATIONAL CAN" on your Packaging problems.

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that require sturdy packaging and unexcelled for articles that require a package for permanent use. Items often seen in such boxes are fountain pen and pencil sets, safety razors, electric dry shavers, watches and jewelry, travelling clocks, sewing kits, sample kits, delicate instruments, machinists' tools, cosmetics, pharmaceuticals, dental displays, hearing aids, playing cards, picture frames, belts, and goggles.

Progress has been rapid in the thirty-five years that have elapsed since the first covered metal boxes were made. Mass production methods now prevail, utilizing machines that are capable of turning out a large daily volume and completing exceptionally large orders in a reasonable time. There is a wide assortment of standard sizes, so that for most articles a suitable standard size is available. Expensive equipment is necessary for each size made, but factories have become more efficient in developing new tools. Even a special size or shape of box can now be obtained in quantity runs.

This type of package seems destined to be used more and more. In addition to the features mentioned is the advantage of economy—one of the standard sizes or styles can be used until the volume of business warrants a special design. Probably the most valuable asset of such packages is the public appreciation of them; consumers believe that the package costs much more than its actual price.

Metal finished boxes

The uncovered metal boxes are widely used for cosmetics. They are made of brass or other alloys, finished in various colors and designs. Beautiful effects are obtainable by combining enamel and metal finishes. Among the articles made in this manner are compacts, boxes for rouge, mascara, and powder, lipstick holders, perfume dispensers, and cigarette cases. Careful attention has been given to artistic design and beautiful color schemes to attract the feminine eye.

The situation in metals has become so acute that manufacturers will have to exercise greater ingenuity in adapting the materials at hand and also do more thinking about *ersatz*. But *ersatz* does not necessarily imply inferior goods. It often means material improvement in products and that, it seems, will be the case here.

Some cosmetic houses have been considering the use of substitute materials for their vanities and lipstick containers. However, in spite of the competition of synthetic materials, the trend today is noticeably stronger in the direction of metals. The reason for this is easily and simply explained: no other satisfactory product has yet been discovered that can match or approach the practicability, durability, and beauty of metal. A compact made from metal is truly compact, neat, and easily handled, not bulky or burdensome. Furthermore, with matters military dominating today's news and thoughts, it is natural for this to carry over into style trends for consumers, particularly in types of containers. Metal finishes are very popular and these can be attained only through the use of metal itself. Another type of finish which has become extremely popular is the jewel finish, which cannot possibly be produced from another type of material.

The adaptability of metal and the ease with which it may be molded into any shape desired has led to com-

Most popular covering for specialty metal containers is leatherette, although velvet, rep and other fabrics may be used. Distinctive feature of the boxes is a spring hinge which works automatically to hold the cover wide open or tightly closed. Thus for display purposes, such boxes may be kept open at a 90-degree angle. Photo Farrington Mfg. Co.



PACKAGING CATALOG

SUNALLOY...

A Contribution to Conservation

VER four years ago, before tin had become a "strategic" metal, a long-term program of research into the use of tin and its alloys in the manufacture of collapsible tubes was instituted by the establishment of a Fellowship at Carnegie Institute of Technology.

The requirements of the defense program and the desirability of effecting a decrease in the amount of tin used in packaging accelerated this research program. Then, early in 1941, Sun Tube Corporation offered a suitable alloy, with a substantial indicated saving of tin, to be used as a substitute for tin and aluminum in collapsible tubes.

Sunalloy has been tested with various types of products. In a number of cases, it has been found satisfactory without further processing. In other cases, internal tube coatings similar to those used on tin-coated and aluminum tubes, are desirable or necessary. Obviously, no substitute for tin tubes should be used without thorough testing with the specific product to be packaged.

In addition to tubes made of Sunalloy, Sun Tube Corporation will continue to manufacture tubes of tin, tin-coated lead, and lead, within any restrictions which may be imposed. The million-gross annual capacity of its plant assures its customers of deliveries.

*Patent applied for

SUN TUBE CORPORATION

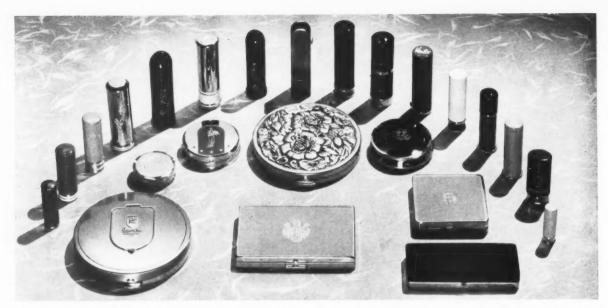
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CINCINNATI, OHIO G. M. Lawrence 125 West Central Parkway

ST. LOUIS, MO. 315 Chestnut St. (Room 125) Alexander Seymour 903 Pioneer Bldg.

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Metal boxes are widely used for cosmetics and are made of brass or other alloys, finished in various colors and designs by combining enamel and metal finishes. The swivel-type tube is most popular for lipsticks, because of its convenience and efficiency, but the push-type case is still used for numerous cheaper items. Photo Scovill Mfg. Co.

pacts in a variety of shapes—square, oblong, hexagonal, as well as round. The size of many vanities has been increased to three inches and more, with a corresponding increase in beauty of design.

Metal is readily adapted to another clearly discernible trend towards the triple vanity case which carries lipstick, dry rouge, and loose powder. The smaller, double vanity still holds an important place on the market and there are now two styles of double cases, one for dry rouge and loose powder, and the newer one which has a compartment for loose powder and a lipstick, but no rouge. Beautifully wrought boxes are also available to those who prefer this type of container for rouge alone and individual cases for lipstick, which may form part of a set together with a vanity of similar

Metal box, covered with lush velvet and an applique motif on cover. Inner tray is removable to offer greater re-use value. Case is lined throughout. Photo Arrow Mfg. Co.



design. The most popular container for lipstick seems to be the swivel-type tube, probably because of its convenience and efficiency, but the push-up type of container is still used on many of the cheaper items.

Perfume in solid sticks is now making a dramatic appearance on the scene, and creates a demand for metal containers of the type and size used for lipsticks.

Make a virtue of necessity

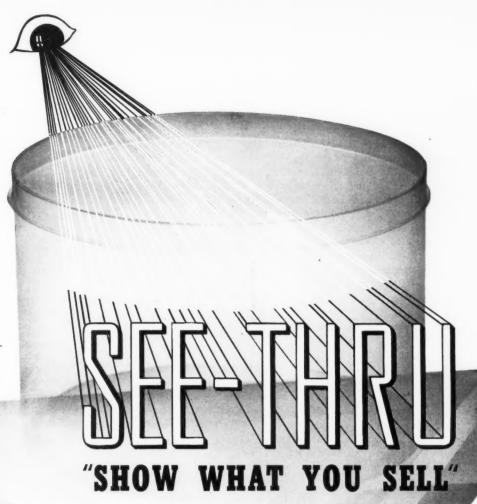
The makers of specialty metal containers have always had to be ingenious because, year after year, they must produce better designs for highly competitive lines in a vast number of industries and for a huge quantity of different type outlets.

It would appear, therefore, that the future of the metal display box, in spite of hell and high water, will be decidedly in a forward direction. It seems reasonably sure that new trends will be established, especially true in the highly stylized field of cosmetics where lipsticks, compacts, and the like may well have their "faces lifted" with new designs in the softer, fabric finishes.

Another trend, especially among users of large volume who own their own dies, will be to make slight changes in these dies and thus give the impression of new boxes without actually carrying out any expensive changes. By making changes in trimming dies or punches without changing the major blanking operation, new effects may be inexpensively created. To these may be added new coverings, new colors, new trimmings.

This is *ersatz* but it is also economy, and it will require tremendous ingenuity. Nevertheless it will work, and styled goods will not fall off in sales appeal if the industry of specialty metal containers has its way.

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PACKAGING CATALOG

Collapsible metal tubes

by William Rose

PACKAGERS using collapsible metal tubes should remember that the defense effort means government control of all basic metals necessary for armaments and defense. During 1941, the collapsible tube industry operated at almost maximum capacity, apparently because of the increased use of products packaged in tubes. During the same time, collapsible tubes made of aluminum virtually disappeared from the market and the use of tin tubes for shaving preparations, adhesives, and paints has been discontinued at the request of the Office of Production Management.

Plastics for caps and facilities for molding them have become scarce. Certain pigments used in decorating tubes, cork for cap liners, lacquers, paper boxes and shipping cases, and other materials and requirements are all more or less restricted and rationed. This situation is, of course, not unique and is familiar, but the necessary changes in materials and techniques are important as they have a bearing on the future.

In accordance with some estimates of requirements, aluminum will not be available for tubes for a long time. For various reasons, tin is the most suitable metal for packaging many products and, in the past, by far the largest proportion of tubes used has been made of this metal. The tin supply for 1942, however, is not up to expectations. Shipments from the Far East will be virtually discontinued due to war conditions. Recovery of tin from used metal is possible, although for all practical purposes no more than 12,000 tons could be recovered in this way.

The tube industry has for years had a substitute for tin tubes, used to some extent in this country and to a much greater extent in Europe, in the tin-coated lead tube, known also as "tin-plated," "tin-lined," "laminated" and "composite" to avoid calling attention to the fact that lead is the basic metal. More recently, tubes made of a tin-lead alloy have been used and these two substitutes, each of which provides a saving of about 70 per cent of the metal used in all-tin tubes, are the only substitutes yet developed commercially which have proved to be satisfactory.

Many tubes using plastics, paper, or other basic materials have been invented, but none has yet been found that can compete with the demonstrated qualities and economic advantages of metal tubes. Tubes of tincoated lead or tin-lead alloy, if the nature of the packaged product should require it, can be coated internally with inert materials to prevent chemical or electrolytic reaction between container and contents. Undoubtedly, the use of these substitutes will continue when normal conditions are restored and the packaging practices and methods of the future will be influenced by research and developments during 1942.

The approach to the use of substitute materials for tubes should be by way of exhaustive tests with the actual products to be packaged, particularly when essential oils are included in the formulae. The responsibility for such tests should rest with the manufacturer of the product. His own self-interest should dictate the selection of both the particular metal and lining material, if any, best suited to his product.

The metal-substitute tubes are made according to the standards of the Collapsible Tube Manufacturers Association for standard tin tubes which have been in effect for many years. Decoration (labeling) is the same as heretofore, although shortages of the imported oils used in coating materials may affect their quality. To some extent, the use of metal caps may be dictated by necessity but, in all essentials, substitute tubes will retain the economy, convenience and sanitary nature of this type of container.

Classifications of tubes

Collapsible tubes may be classified in five general types, depending on the materials from which the tubes are fabricated.

- 1. Pure tin tubes: Made of new virgin tin, alloyed with a small amount of copper or other suitable stiffener, in minute quantities. No adulterant, such as lead or other soft metals, is used in these tubes and they are essentially for use for any product going on or in the human body. Included among these products were toothpastes, shaving creams, cosmetic creams, depilatories, contraceptives, ointments, food products, hand soaps, and pharmaceuticals.
- 2. Lead tubes (lead-alloy tubes): Made of lead alloyed with antimony or tin. They have been used almost entirely for non-personal products such as adhesives, shoe polishes, paints, colors, and grease
- 3. Aluminum tubes: Made of pure aluminum, formerly replaced tin tubes to the extent of about 10 per cent of the total consumption. Because of the great chemical activity of aluminum, use of it was restricted to chemically neutral products until suitable vinyl compounds, perhaps thirty in number, were developed for use as internal coatings.
- 4. Tin-coated lead tubes: A lead tube structure coated with thin layers of tin, inside or outside or both, which presents much the same appearance as tin and is less expensive. However, they have not been generally accepted as fulfilling the standards of quality set by manufacturers or by the public. In some cases, the combination of the two metals in the presence of an electrolyte—an alkaline product, for example—has resulted in electrolytic action detrimental to both product and container. Internal coatings have been perfected which have

in appreciation

It has been very gratifying to us in endeavoring to carry out our policy of equal attention to all our customers' requirements, large and small, during these trying times to receive in return such splendid cooperation and a real understanding of our efforts in their behalf. We therefore take this opportunity to publicly acknowledge such cooperation on the part of our customers and to say that we shall do everything possible to maintain our policy.

NATIONAL COLLAPSIBLE TUBE COMPANY

Chicago * 362 Carpenter St., PROVIDENCE, RHODE ISLAND * San Francisco

Plain and Decorated Collapsible Tubes



Single dose tubes illustrate wide variety of sizes and many applications for which they have been used. The large tube at left contains fire extinguisher, far less expensive than previous types of packing. Small tubes at extreme right are for single dosages of headache powders, for glue or for nose and throat drops. Screw and applicator caps used. Photo Sun Tube Corp.

largely overcome this objection and, for the period of the emergency, tin-coated tubes have been approved for the packaging of shaving creams. This approval may be extended to other types of products.

5. Tin-lead alloy tubes: A recent development for which some advantages over tin-coated lead are claimed. The principal difference is the avoidance of electrolysis. Tubes of this type may be internally coated, as in the case of aluminum, and tin-coated, with equally good results. They are somewhat more costly than lead tubes, but compare favorably in price with other types.

Tube specifications

There is no great trick in drawing tube specifications. The dimensions are determined by the amount of product it is desired to pack or by the size of tubes used in similar price lines by established competing products. The size of the neck opening is, in large measure, determined by the plasticity of the product and the quantity ordinarily used in one application. Thus, "brushless" shaving creams are packed in tubes with large openings, opthalmic ointments in tubes with pinhole tips.

Specifications for tubes require the following data:

DIMENSIONS: Diameter at the shoulder; length from shoulder to open end.

Size of neck or diameter of neck opening.

Wall thickness at shoulder.

CAP: Material and type of cap; type of liner.

DECORATION: Shoulder embossing, if any; coating and number of colors in printed matter.

METAL: Tin, tin-coated lead, lead or aluminum.

Design and decoration

The cylindrical shape of collapsible tubes is dictated by the method of manufacture and the method of closing and sealing. Possibilities of variation in structural design are, therefore, nil. Design enters into the appearance of the cap and the embossed decoration on the shoulder, but it is on the "label" or side that design has fullest opportunity. While the fixed cylindrical shape imposes certain limits, these are the only limitations. Label designs may be of any character capable of reproduction by zinc etching, photogravure or halftone. Decoration may be printed or embossed and printed in from one to four colors on a white or tinted coating. By the use of process plates, additional tints can be secured. The brilliant metallic surfaces can also be produced on tubes with a high degree of fidelity.

Brush-tip applicator tubes for nail polishes and polish removers. Lengthwise label design. Photo A. H. Wirz, Inc.



Ilass Containers
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ROGRESS in the glass container and closure industries in recent years has been so rapid that it is difficult to form a clear, comprehensive picture of all their products. In order to take full advantage of the potentialities of packaging in glass, a prospective purchaser must realize fully not only what has been done but also what is being done. He should, therefore, present the full details of his packaging problems to the suppliers and manufacturers. The following is intended to serve only as a basic guide.

A glass container is defined today as a glass package that requires a closure. By the terms of this definition a packer must, therefore, deal with two industries for the two parts of his completed glass package—the manufacturers of glass and the manufacturers of closures. Fortunately these two groups, while remaining separate industries, requiring different types of research and engi-

neering knowledge, are closely associated so far as the purchaser of glass is concerned, frequently being housed under the same corporate roof. Furthermore, a third industrial element in successful packaging, the designers and manufacturers of equipment, have also progressed to the point where they are familiar both with the problems of design and with the requirements of the packer himself.

Types of glass containers

From the point of view of manufacturing, glass containers are usually considered as falling into three classes: 1) Narrow neck bottles; 2) Wide mouth jars; 3) Pressed ware, which, because of the method of manufacture, are also wide mouth containers.

From the point of view of use the following classifica-

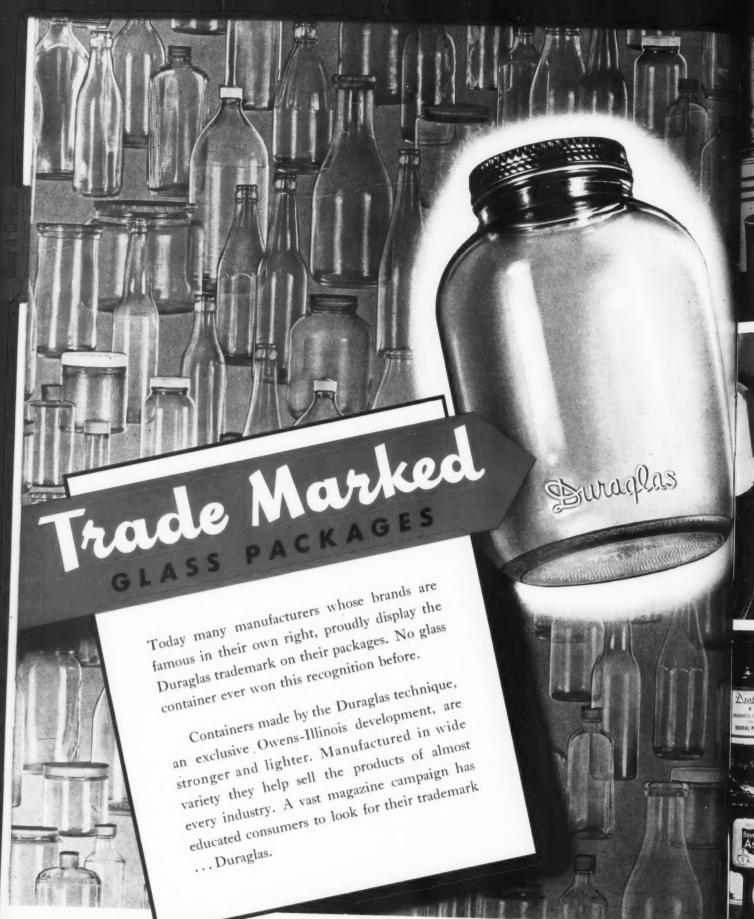
tions have become generally accepted:

1. Narrow neck food containers: These are bottles in which the opening, seldom more than 38 mm., is

1. Group of standardized glass containers. Top row, left to right, 2-qt. and 1-qt. milk, Boston "round" for pharmaceuticals, 2 extracts, 1-pt. wine, tall extract, wide mouth food, 3 Boston "rounds." Bottom row, 4 "Blakes" for pharmaceuticals, new No. 10 for food, 12-oz. no deposit beer, 12-oz. and 32-oz. Steinie and export type beer bottle. Photo Glass Container Assn.







OWENS &ILLINOIS Packaging Service

Re-Use

Consumer-preferred salespackages, as well as premiums, Libbey Safedge Glasses promote fast sales-action. Fabricated in a wide variety of shapes, sizes and decorations which are heat-fused into the glass, Libbey Safedge Tumblers are practical for pressure vacuum, hot or cold packing. They can be sealed with either vacuum or snap-cap closure.

A good closure is tailor-made-part of organized selling and packaging. Its design, and fabrication in either plastic or metal, should add the most "sparkle" with the least possible increase in total cost of the package. Then, too, many O-I closures are functional...lending their aid to the more efficient use of the product.

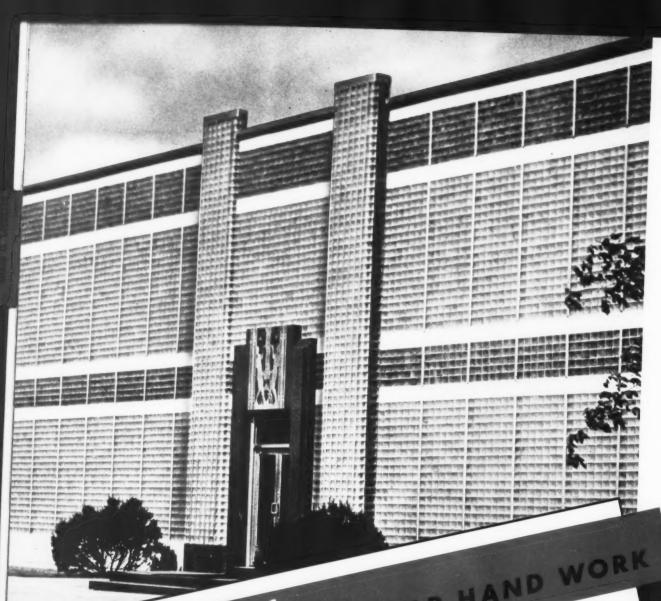




In All-America Package Competitions, on production lines and in final use, metal packages by Owens-Illinois have written a record which speaks for itself. Their finish, lithography, utility and economy are the combined results of technical research and uncompromising standards of

OWENS &ILLINOIS Packaging Service

quality in their manufacture.



ead Work to HELP HAND WORK

You are invited to use the help of the Owens-Illinois Packaging Research Division—largest of its kind in the industry. In helping design a salespackage for you it determines your product's important physical characteristics...considers who is involved in its sale. It goes further—offering expert, practical advice on your filling, cartoning and shipping problems. Such headwork preceding handwork, helps (a) in your securing a salespackage—be it glass or metal; (b) in setting up the most economical production-line for its handling. OWENS DILLINOIS Packaging Service
GLASS CONTAINERS . METAL CONTAINERS

GLASS CONTAINERS . METAL CONTAINERS . SAFEDGE TUMBLERS

smaller than the body of the bottle. They are appropriate only for food products that can be filled in liquid form, and that are subsequently poured from the bottle, such as catsup, non-carbonated fruit juices, table sauces, and the like.

2. Wide mouth food containers: Bottles and jars in this category are blown; hence, they have a shoulder or a neck ring by which they are lifted from the blank mold to the blow mold, but the neck opening is invariably wide compared with the cross-section of the body and often nearly equal to it. These bottles are appropriate for food products that contain some solids such as preserves, mayonnaise, coffee, pickles, fish products, fruits, and vegetables, which must accommodate entry of a spoon or other utensil.

3. Pressed ware: Some food containers can be made by a process similar to the manufacture of castings, except that the mold which acts as the pattern is withdrawn after each forming. This means that the opening in the neck of pressed ware must have straight sides and be at least as wide as the cross-section of the body. Many of the products mentioned in 1 and 2 can also be packed in this type of ware.

4. Pressure and non-pressure ware: This type of bottle, invariably meant for liquids and therefore narrow-necked, is especially engineered to withstand the internal pressure of carbonation. Siphoned liquids, ginger ale, chocolate, and both carbonated and non-carbonated soft drinks (excluding fruit juices and alcoholic beverages) use this type bottle because of the hard wear to which the containers are subjected.

5. Beer bottles: Of two types—returnable and non-returnable. The latter is generally called the "no deposit beer bottle." Both are engineered to withstand the internal pressure from carbonation.

6. Liquor ware: For all the alcoholic beverages except malted products bottled under carbonation.

7. Medicinal and toilet ware: For all types of medicines, chemicals, insecticides, and toilet preparations from smelling salts to shaving creams; it may vary in capacity from a fraction of an ounce to carboys for several gallons.

8. General purpose containers: For products not meant for human consumption either externally or internally, such as ink, paint, machine oil, glue, and ammonia.

9. Milk bottles: Especially styled for dairy products—cottage cheese, milk, and cream.

10. Domestic fruit jars and jelly glasses: Containers meant for home preserving of fruits and vegetables and for homemade jellies.

These classifications reflect a unique characteristic of glass containers—identification with the various classes of products they contain. The grouping outlined above is recognized as common practice in the industry, and the packer will do well to bear it in mind although it is so fundamental that it usually passes unnoticed.

The distinction between these groups of bottles and jars, while it is largely one of styling, is basic and it promotes merchandising. The quart bottle for beer, and the one for milk, are containers definitely identified with two different industries; selling milk in a beer bottle would be a justifiable cause for complaint. By mental suggestion, cough medicine from a spice bottle might not seem so effective as it would from a bottle in the group adopted for medicinals and toilet goods, although the capacity of the two bottles might be exactly the same.





2. In these prescription bottles for products which must necessarily demand containers of widely different shapes and sizes, harmony and family identity have been obtained through color. Plastic screw-on tops. Photo Armstrong Cork Co. 3. Beer bottles showing different standard shapes used—stubby, Steinie, ale, single trip, and champagne type. These acquire personality through individual label and closure. Photo Anchor Hocking Glass Corp.



4. Popular handy style milk bottle represents substantial savings in cost and in storage space and weight. Contour of bottles finds excellent use with dripless finishes. Smaller size also makes possible additional saving in cap cost. 5. Glass coffee package permits maximum commercial vacuum, resealability and visibility and is very economical to use. Photos Owens-Illinois Glass Co.



These basic differences in style among the ten groups of bottles have been emphasized by specialized research applying to the packaging of a single group, and by legislation which has sharply differentiated between industries that have nothing in common beyond use of glass packages.

Private vs. stock molds

The state of the s

Another basis of classification of bottles and jars used by packers distinguishes between private and stock molds. **Private molds** may be designed and owned by individual packers. The advantage of owning them is that they are distinctive because they are reserved for the use of a single packer—at least within his marketing area. The disadvantage is that they cost more to supply. In order to make production reasonably economical, large

numbers of the private-mold bottles must be run off at one time, and storage costs mount. Moreover, if changes are made or if the bottle becomes obsolete, the expense falls entirely on the packer.

For the duration of the present industrial emergency, private-mold bottles will be difficult and often impossible to produce. The manufacture and maintenance of molds are expensive, requiring highly skilled machine labor. The iron and steel required have been so difficult to obtain that already the private molds for liquor ware are frozen to present designs, and it is probable that similar action will be taken on molds for other lines.

Stock molds, developed by the various manufacturers of glass containers, are used either to manufacture a sufficient supply of bottles which are then held in stock, or are themselves held in stock for the manufacture of bottles for which there will probably be a demand. No glass company will invest in a stock mold until it is sure that it can be manufactured economically in large-scale production, that the bottle made from it will be widely used, and that it will hold its market for a reasonable period. Considerable research must go into the design because it must take into account not only the manufacturing of the glass but also the requirements of the average packaging machinery and the merchandising requirements in the field for which the bottle is intended.

The specifications for a mold may be those of an individual company or of the Glass Container Association.

GCA standards

The latter type of specification, standardized for the industry by the Design and Specification Committee of the Glass Container Association, does not fix all the details of construction of a bottle. Certain details of shape and styling are left to individual companies. It does, however, fix the basic specifications, such as the height, cross-section, and weight of a bottle of a given capacity.

This work of standardization has resulted in an orderly modernization of the stock lines in the industry, so that the packer has a wider choice of glass containers.

The containers standardized by the Glass Container Association are only a small proportion of the total number of stock bottles and jars available, but they represent a volume of production out of all proportion to the number of designs. For a complete picture of the stock glass containers available, the packer must inquire of the various glass manufacturers. The accompanying list of GCA standardized bottles and jars is, therefore, a basic list of stock items, amplified in varying degrees by the sales lists of the forty-odd glass companies.

STANDARD SPECIFICATIONS FOR GLASS CONTAINERS

Narrow Neck Bottles		Beer Bottles
C-740	Tapered Oblong: For ex-	C-102 Stubby
	tracts	C-128-A Steinie
C-302	Round Stubby: For Catsup	C-130-A Ale Shape
C-310	MediumHeight: ForCatsup	C-146-A Export Shape
C-324	Round: For Tomato Juice,	C-150-A Select Shape
	Fruit Juices, Syrup, and Vinegar	C-184 Single Trip C-190-A Champagne
C-344		Shape
C-362	Round Stubby: For Juice	
Med	licinal and Toilet Ware	Liquor Ware
C-440	Stubby: For Rubbing Al- cohol	C-202 Vinty Wine C-222 Decorated Oval
C-604	Oval: For Castor Oil	Wine
C-624	Boston Round	C-240 Round Wine
C-642	Narrow - Mouth French Square	C-260 Round Brandy
C-660	Round: For Hydrogen Per- oxide	General Purpose
	VAIGO	C-680 N/M Handled Gal-
7	Wide Mouth Bottles	lon Jug
C-704	Plain Round: For Food	C-690 N/M Round Gallon
C-722	Oval: For Foods	Bottle
C-760	2 lb. Table-Serve Round:	C-800 Shellac and Paint
	For Preserves	Jar

Milk Products

Bottles for Milk and Cream

Jars for Cottage Cheese

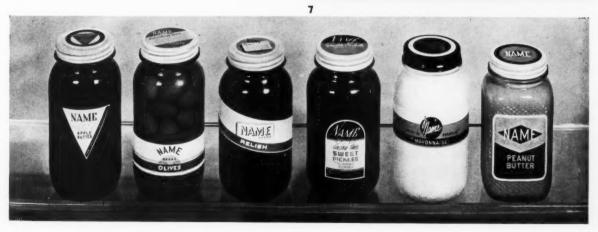
Wherever practical, when the design for a bottle is standardized, a family of bottles, similar in shape but in a range of capacities, is standardized at the same time. Thus, the blueprint for Boston Rounds gives specifications for bottles with capacities of $^{1}/_{2}$, 1, 2, 3, 4, 6, 8, 12, 16, and 32 oz.; and the Plain Round Wide Mouth Jar (Food Container) is provided in capacities ranging from 4 to 107 fl. oz.

Modernization is important

While on the subject of design, it is well to consider the subject of redesign for lighter weight, one of the most progressive developments in the industry in recent years.

6. A large part of wine and liquor industries prefer simplified traditional designs, such as this, in their containers. Distinctive labels and closures set bottles apart from those of competitors. 7. Light-weight, plain food jar showing how variety of treatment may be obtained through decorative closures and labels. Photos Owens-Illinois Glass Co.





Briefly stated, this means an application of the basic principles of design to the new knowledge of bottle structure and manufacturing technique which results in the saving of unnecessary glass. In practice, redesign has had three beneficial effects: 1) designs have been modernized; 2) weights of glass have been reduced; 3) operating speeds of machines have been increased.

Many lines of bottles were designed in the days when a set of molds for hand-blown bottles cost only \$20 to \$30. Because production costs were also low, packers could afford to experiment with a variety of styles, and they emphasized slender shapes which made the package appear larger but which wasted glass. Some of these designs were continued long after the introduction of machinery for mass production. A set of molds for a modern automatic bottle machine now costs from \$400 to \$2,000 depending on the size and design; and the difference in the cost of producing two containers of the same capacity but different styles has widened proportionately.

The trend towards lighter weight bottles simply recognized the fact that a design had been outmoded by the new manufacturing methods. For instance, a few years ago it was not uncommon for a pint flask to weigh 16 or 17 oz.—obviously too much for the capacity. Redesign has produced a flask that weighs only 13 or 14 oz.

Modernization has also reduced the height of unnecessarily slender bottles, eliminated panels or sharp corners,

and concentrated on using glass in the most economical manner for the function of the container. Further reduction in weight was brought about by engineering the design in terms of recent advances both in the quality of glass and in the machinery for blowing and annealing bottles. The result has been to reduce weights from 20 to 60 per cent and to increase speed of production. In general, the bottles cost less to produce, are less expensive to ship and store, and are handled more economically by high-speed packaging lines. It must be remembered, however, that all lines of bottles are not redesigned for lighter weight with equal ease, and that redesign means more than simply a reduction in the amount of glass put into a bottle.

Other factors, besides those enumerated here, have contributed to strengthen the trend towards conventional shapes produced in large quantities. Automatic manufacture, while it has greatly reduced the unit cost of glass containers, has meant a vast increase in the cost of a single new bottle. The investment in tanks and machinery is large compared with what it was in the old days of hand-blown glass. Packers' handling equipment has advanced to the point where straight line production is usual. Uniform standardized glass containers are required for economical operation, and for the modern methods of merchandising which have been developed for marketing over wide areas.

8. Types of bottles for pharmaceuticals—oval with medicine dropper, cylindrical and narrow mouth French square—equipped with black plastic screw-on closures, two of which have finger-grip edges. Photo Owens-Illinois Glass Co.

9. Table syrup in glass pails with a distinctive type of label incorporating human interest. Size illustrated is 4-lb. 11-oz. They have gold lacquered metal caps. Wide mouth permits entry of spoon. Photo Hazel-Atlas Glass Co.





PACKAGING CATALOG

New sales appeals

AUM

Simultaneously with the tendency towards fewer types and styles of bottles and jars, new methods have developed for making the glass package distinctive. The first and most obvious development of this kind is the progress in label design, discussed in another section. The full possibilities of fused-in color have not been thoroughly explored. Already used widely on decorated tumblers and cosmetic jars, the process consists of applying vitrifiable colors to the surface of the container and then firing them permanently on the glass. The colors, which are available in a wide range, are resistant to practically all fading agents.

Another feature in the styling of glass containers which has been widely diversified in recent years is the closure. The whole appearance of a bottle may be transformed by adopting a new type of closure and, whereas a dozen years ago the packer was comparatively limited in his selection, today he has at his command a wide variety of styles, colors, and materials for closures of equal efficiency in sealing.

The choice of a glass container and closure which will give the greatest satisfaction in every respect—production as well as sales—requires care and forethought. The glass container and closure industries have now adapted themselves to packaging problems and close cooperation with them is invited on the choice or improvement of a glass package. Following are some of the considerations which a packer should bear in mind:

CHECK LIST IN SELECTION OF GLASS CONTAINERS

I. Questions affecting specifications for container:

- 1. In what capacity or capacities is the product to be merchandised?
- 2. What is the minimum size of opening required for the most efficient operation of the filling equipment?
- 3. What features of the container are required or are advisable for the convenience of the consumer?
- 4. Is the product under pressure after sealing?
- 5. Is the product processed after sealing?
- 6. What restrictions on bottle specifications are imposed by existing conveyor systems or other equipment?
- 7. What federal or state regulations affect capacity, color, or other features of the glass package?
- 8. What stock containers are available for the product, keeping in mind the above considerations?
- 9. How does the size of the container affect the size of shipping carton?

II. Questions affecting closure:

- 1. Does the product require hermetic sealing?
- 2. Is the product processed after sealing?
- 3. What factors of convenience to consumer affect type of closure?
- 4. What types of liner material do not react to the product?

III. Questions affected by merchandising appearance of the package:

- 1. Is the label space adequate?
- 2. Is there a sales advantage to be obtained in choosing the container for its re-use or premium value?
- 3. Is the container styled to suit the nature of the product?

Finishes for glass containers

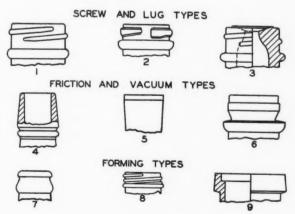
by F. P. Gass

HE *finish* of a glass container is the region designed for the application of the closure. It is so called because in the old hand-blowing days it was the last part of the bottle to be shaped.

Since this finish is the bridge between the glass bottle industry and the closure industry, it is obviously essential that the dimensions of the finish be common property of both manufacturers. For this reason, the Glass Container Association has standardized every type of commercial finish for which closures are made, and the specifications of these finishes are available for the guidance of all producers of glass containers and closures.

These finishes may usually be applied to bottles of any design. So far as the prospective purchaser is concerned, all he has to do is to determine the type and size of bottle or jar he desires and the type and size of closure. When the shipments of glass containers and their closures arrive at the plant, the GCA standardization of finishes makes possible an accurate fit.

Approximately a hundred finishes have been standardized. These are designed for all commercial closures. In the following section describing the closure field, it may be taken for granted that the proper finish is in the hands of the glass manufacturer.



Representative standard finishes for bottles of any design: 1. Shallow continuous thread. 2. Two lug Amerseal. 3. All glass sprinkler top. 4. Brandy cork. 5. Tumbler friction. 6. Deep friction "pry-off." 7. Crown. 8. Roll-on. 9. Band. Drawing Glass Container Assn.

HE primary closure of a glass package is the one that has any portion of its inner surface exposed to the contents. Depending on the construction and size of the container finish and the closure, the area of contact between the inner surface of the closure and the product may be large or small.

A secondary closure is one that does not come in contact with the glass-packed product. It may be used:

1) as a dust cover to keep the whole neck of the bottle or jar clean for dispensing purposes; 2) as a cover for whatever part of the product remains in the container after the primary seal is removed; 3) as a decoration to "dress up" the package; or 4) to hold the primary seal in place on the glass finish.

Primary closures

The function of a primary closure is to seal the bottle and to remain securely in place until the consumer opens it. Every primary closure consists of:

- Sealing surface, to be pressed against the sealing surface of the container
- 2. A cover portion for the mouth of the container
- 3. Some means of securing the closure to the container.

The sealing surface of a closure is usually a gasket or liner that is not affected by the product, backed with a compressible material which will conform to the sealing surface of the container.

The first thing the packer must know about his closure is whether it provides the degree of sealing required by the product. Properly applied, a closure may be airtight, liquid-tight, or simply sift-proof. It may be designed to hold internal pressure of varying amounts, to vent and re-seat after venting, or to hold a vacuum. The degree of sealing depends primarily upon the nature of the material used for both liner and backing, and the pressure exerted by the cap on the liner. For a certain degree of seal some types of closures are more appropriate than others. If a product is to be processed for sterilization after filling, the closure and gasket must be resistant to heat and water.

After the packer determines these facts about his closure, he may turn to such other characteristics as convenience in opening, appearance, cost of application, workmanship, and quality; and on these points the arguments of various sales organizations can supply him with complete data.

Types of closures may be more clearly discussed by classifying them according to the methods used to secure them to the finishes. The sealing surface of the bottle may be on the inner surface of the neck, on the top of the neck, or on the outer surface of the neck; therefore,

closures are designed for *inner seal*, *top seal*, or *side seal*. Thus classified, closures fall into five types:

- 1. Friction sealing: The oldest method of sealing is by compression of a resilient material held in place by friction; for example, the common cork, which makes an inner seal. A variation is the friction pry-off, with an outer seal. In many cases, the latter type of closure is used to reinforce a vacuum seal, so that two principles are used to effect compression on the sealing surface.
- **2. Screw or lug sealing:** The use of a screw or lug accounts for about three-quarters of all glass containers for all purposes. Here again the resultant pressure may be used to reinforce a vacuum seal.
- **3. Formed seal:** A third way of sealing is to form part of the closure on the bottle, using the finish of the bottle as a mold. The crown cap is an example.
- **4. Vacuum seal:** The fourth method of sealing depends solely on the difference in pressure between the inside and outside of the sealed container to secure the closure to the finish. The inside pressure must be less than the outside, hence there must be a vacuum within the container and the sealing gasket must be of a suitable nature to hold the vacuum.
- **5. Combination and miscellaneous seals:** Some seals are effected by using a combination of two or more of the four types already described.

Within each of these general divisions is a wide range of variations.

Friction closures for an inner seal may be tapered glass with a ground glass surface. The most popular friction closures are cork stoppers. They may have straight sides (wine and whiskey), tapered sides (miscellaneous jugs and flasks), champagne style, or cored for use with sprinkler tops or applicators. The corks may have tops of plastic, wood, metal, or wood covered with metal. Side seals by friction only are most common on tumblers. On jars, combinations of side friction and vacuum are frequently used, and the glass finish is often provided with a ledge for pry-off opening. The vapor vacuum or other vacuum-sealing processes often combine friction side-sealing with the vacuum sealing. Screw caps: May be deep or shallow, the deep screw having a skirt about 1/3 deeper than the shallow. They may be a single shell, with the threads exposed; a double shell, with the threads concealed in an outer casing; or the outer casing and concealed thread may be made of a single piece of metal. They may be of metal, or plastics, or both; and may be knurled, semi-knurled, or unknurled. The skirt may have an outwardly rolled edge, a raw edge, or a turned-in rolled edge. The top may be domed, partially domed, flat, or have a depressed ring. Lug caps are variations of screw caps, since the lug acts

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as an interrupted thread. The lug may be made by 11 is sure to find several competing types which are approindentations in the skirt, or by turned-in projections on the edge of it.

Formed seals: The most familiar of the caps formed on the finish of a bottle is the crown cap, used for beer, carbonated beverages, condiments, etc. Another type of formed cap is the roll-on—a piece of aluminum or other ductile metal in which the threads are formed by the capping machine to conform to threads on the finish of the bottle. Another type of formed cap is the chuck crimped type where the chuck on the capping machine collapses or squeezes the skirt of the cap against the side-sealing surface of the finish.

Vacuum only: Caps, under which vacuum may be obtained by special sealing machines, by cooling and contraction of hot packed product, or by some combination of these methods.

Miscellaneous and combination caps: The bandcap is one in which a metal band applied with a sealing machine locks a sealing cover (often held under vacuum) under a ledge on the container. Bands in the form of a tear-off or separate removable band around the finish of a container are often used as supplementary seals. A band is sometimes used to hold a cover cap in place and prevent it from accidentally becoming loose. When made an integral part of the primary closure it makes it tamper-proof.

Many further variations of the other four main types, have been developed for specific products. The packer priate for his product and package.

Secondary closures

Among the secondary closures are the so-called cover caps, frequently used to protect the primary closure or pouring edge of a bottle. Many milk bottles have cover caps of paper or aluminum foil, and distillers often use a hood of gold or silver foil over the cap to dress up the package. Catsup cover caps made of tinplate are used as covers for partially filled bottles after the primary closure such as a crown or formed cap is removed. Many secondary closures are made of cellulose cups, either opaque or transparent, sealed over the primary cap on the finish.

In this classification also are a variety of tamper-proof closures, usually metal strips which bind the primary closure, and must be destroyed before the bottle can be opened. Here, too, is the cellulose disc applied inside the primary closure, secured by an adhesive to the sealing surface of the bottle.

The virtues of packaging in glass under closures are too well known to require further description. For the proper type of closure and glass finish to specify for a given set of packing conditions consult the manufacturers of closures and glass containers, many of whom are equipped to offer to the trade without charge free laboratory and engineering services, in addition to the wealth of experience which they all possess.

GROUP 1 FRICTION SEAL



Champagne cork for foreign or domestic champagnes. It is made from selected and tested corkwood in two types, for first and for final bottling



A straight cork. For use in sealing still wines (dry and sweet). Oversize. and driven under compression into bottle. Tap cork. Inserted in bushes in heads of kegs in cooperage factories or breweries



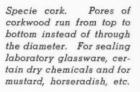
Tapered cork. Generaluse closure for bottles, jugs, flasks, etc. Manufactured in a wide range of grades, tapers and sizes

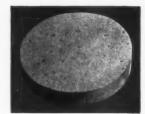


Round top cork. Variation of tapered cork, with same uses. Shell cork. Used with glass or fancy stoppers, sprinkler tops and as orifice reducers



Wedge top cork. Ordinary tapered cork with formed top. Essentially a closure for perfumes and cosmetics







Left: Crown catsup covercap. Friction type with small lugs. Right: Covercap, screw type, for catsup

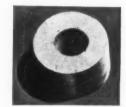
Sprinkler cork. Metal sprinkler inserted in shell cork. Used for dispensing liquids such as hair tonic





Lock-Tite slip cover. Used on cans or pails of paint, varnish and certain food products. Pry off to open

Orifice reducer. Shell cork which may be equipped with metal fitting and used to convert standard cork or screw finish into shaker type unit for dispensing

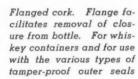




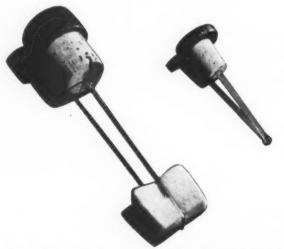
Topped corks used for sealing liquors, perfumes, essential oils, extracts, etc., are of three types: Right. Molded plastic top attached to cut cork. Left. Lithographed metal top cork. Center. Embossed wood top cork

Rubber cork or stopper, used for bottles containing ammonia and certain corrosive chemicals, etc.









Corks with wooden tops. Left: Dauber. Right: Applicator

Anchor D cap. Side seal; air-tight or vacuum. For jars, bottles and tumblers



MODERN BUYERS Demand Closures with A Function!

Consumers actually demand Federal functional closures-in fact. some products cannot be sold without them so great has been their acceptance for use on windowcleaners, mothproofing liquids, syrups, etc. Servers, sprayers, dispensers—all make products easy to use, eliminate mess-and waste -and turn sale packages into dispensing packages, thus bringing brand identification right into the home where it can best help re-Smart packagers in all fields sale. use Federal functional closures to sell goods-to insure consumer satisfaction with their product after the sale—and to build product success on the sound basis of repeat sales.



Midway Chemical's "Aeromist" is finely sprayed through type SDS plunger.



Unique Colorful Tenite dispensing cap which is readied for market with application of simple liner. Cap for added convenience—and re-use as cocktail shaker.



Colorful Tenite soap dispenser, capacity 1 quart, with heavy metal mounting bracket and lock top (optional) for plants, theatres, etc. Sells more soap powder!

Plastic batter server with all-plastic top and removable plastic slide. 48 oz. capacity. Combines with no. 427 dripless server for matched set.





Plastic no-drip server in red, green, yellow, blue, ivory and black. Plastic top and slide, stainless steel spring.



All plastic, all color plastic sprayer. Consumers pick these colorful closures every time.

FEDERAL TOOL CORPORATION

CLOSURES WITH A FUNCTION

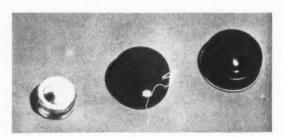
400 NORTH LEAVITT STREET

CHICAGO

GROUP 2 SCREW OR LUG SEAL



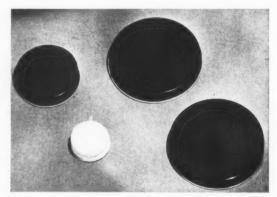
Left to right: Perforated (partial dome), rolled edge, no knurl. Flat, rolled edge, with knurl, depressed ring. Single perforation, rolled edge, knurled depressed ring



Left: Partly domed top, raw edge, semi-knurl. Center: Full dome, no knurl. Right: Standard dome, no knurl



Metal cap lined with flowed-in composition rubber. Used for the hermetic sealing of all types of food products



Upper left: Flat top, rolled edge, no knurl. Upper right: Flat top, rolled edge, with knurl. Below, left: Full dome top, rolled edge, no knurl. Below, right: Flat top, no ring, no knurl. Used for a variety of products



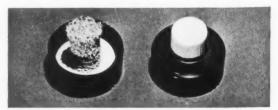
Safedge Snap Cap. Used on tumblers principally for dairy products. Top and bottom of cap, at upper left



Flat top molded cap used for jars; continuous threads



Various types standard designs of molded bottle caps



Left: Molded cap with sponge applicator. Right: Molded cap with sprinkler opening and typical standard design screw top. Black and white show parts

Seals of Cellulose provide Product Protection



Seal goes on when wet



. . . dries quickly, shrinks tight.



ANY of the products packaged in glass today are protected by "Cel-O-Seal" cellulose bands. The little seals firmly hold the closure—the cap, lid or cork—to the bottle or jar, preventing any loosening, which would let air in and flavor or aroma out; and they keep bottle mouths free of dirt accumulations that otherwise might occur in transit from factory to store.

In a word, they assure the ultimate consumer that the product purchased is as pure and flavorful as when it was originally packed by the manufacturer.

Thus do "Cel-O-Seal" bands, developed through Du Pont chemical research, protect products that enter your home—food, drugs, cosmetics, wines and many other items, even toothbrushes.

Seals of a special type—trade-marked "Wind-O-Band"—protect distilled spirits packages. These afford protection of United States tax stamps. Moreover, sealed packages cannot be duplicated by bootleggers. "Wind-O-Band" seals are available in a variety of colors, and may be so imprinted in other colors as to produce a three-color effect.

E. I. DU PONT DE NEMOURS & CO. (INC.) WILMINGTON, DELAWARE

How to plan the perfect package



When you're planning a new package or have a problem with an old one, isn't it logical to consult an expert whose long experience and success at meeting just such problems as yours is advance assurance of a practical, satisfactory answer?



Wide Mouth Food Containers

Narrow Mouth Food Containers



Wine and Liquor Bottles

Drug and Cosmetic Containers





Many years of planning highly successful packages for all kinds of food products, involving every conceivable sealing, production and sales factor, has enabled Anchor Hocking to build up a remarkably complete line of stock glass containers, in both crystal and amber. Among these you will almost certainly find one that exactly meets your requirements...a practical, attractive container that will not only win enthusiastic approval from your production, sales and purchasing executives by its construction, durability and economy...but will please your customers with its appearance and convenience. If, however, you do need something special, we shall

be glad to discuss with you the question of an individually designed container for your particular product.

As for closures, Anchor Hocking offers the widest range on the market...airtight, vacuum, screw, lug and friction...our recommendations are thus free of bias, you are sure of getting the closure best suited to your product, purse and purpose. And every Anchor closure gives you some exclusive feature of design or construction that will enable your package to do a better job.

A helpful, well-experienced Anchor Hocking man will be glad to call and discuss your problems...he is fully qualified to give you practical, constructive advice. A word to us and he'll be at your desk.



General Purpose Containers

Metal and Molded Closures:



Beer and Beverage Bottles

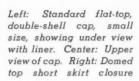




Ash tray top. Domed, single shell, continuousthread cap with printing



Anchor Beacon. Lug cap with flat peripheral side





2000

Various types of molded caps; shallow for pints and halfpints of liquor; deep-skirted for quarts and fifths. Center: Molded spout cap for dispensing hair tonics, lotions, etc.

Molded plastic cap with single sprinkler opening





Partially domed top, rolled edge, with knurl, decorated

Perforated shaker top (flat), rolled edge, with knurl

Unishell in which screw thread is formed from curled-under edge so that the peripheral side is flat. Decorated with brand name





Deep screw cap with knurl



Anchor Amerseal. Lug cap with knurl. Used for food

Molded plastic jigger caps with debossed trade mark; sealing type jigger cap and cover type for liquor





Top: Uniplex. Single-shell lug cap with flat peripheral side. Under and top views. Bottom: Duplex, single-shell, lug cap with flat peripheral side

Transparent acid resistant decorative closure molded of polystyrene plastic





292

Double shell cap: Large standardized flat-top type

PACKAGING CATALOG



SEALS OF CELLULOSE

- **★** COLORFUL
- **★** IMPRINTED
- **★** INEXPENSIVE
- ★ DISCOURAGES TAMPERING
- **★ PROTECTS TAX STAMPS**
- ★ IMPROVES PACKAGE APPEARANCE

THE

REPRESENTATIVES

IN ALL
PRINCIPAL CITIES

GELON

COMPANY

NEW YORK CITY

THE CELON CO. 71 W. 23rd ST.

Main Plant and Office Madison Wisconsin

PACKAGING CATALOG

293



Domed top, with grooved side for finger grip to facilitate opening of jar



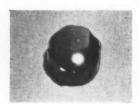
Double-shell cap of gold-wash brass. Upper and under views are shown in photograph. This has a domed top and long skirt



Domed top, decorated with a series of indentations



Kep-Ark cap. Inner shell replaced with an expan-sion-type ring which locks liner into cap and adjusts threads to variations in it



Domed top, with variable indentations which define a square. Generally referred to as a "square top"



Double-shell cap of bur-nished brass with an ex-tension dome. The upper and under views are shown

GROUP 3 FORMED SEAL



Saniseal cap. A tin-plate crown is lined with water-proof paper for demijohns and unlined for milk bottles



Crown caps, designed primarily for sealing carbonated water, beverages and bottled and canned beer



Right. Anchor T cap. Side seal; air-tight or vacuum



Left. Roll-on screw cap of aluminum; threads formed on the container itself

Dacro cap for milk, cream and fruit juice bottles



It was a tiny thread of carbonized bamboo fibre used as a filament—that finally enabled Edison to perfect his invention of the Electric Light.

And it was CROWN'S development of small but vital improvements in <u>Closures</u> that has had a widespread effect on the sealing of glass containers. Several of the closure improvements that have come from the CCS Laboratories have revolutionized sealing methods. These improvements, together with Crown's unvarying high quality, have increased sealing efficiency, lowered sealing costs, and made glass-packed products more acceptable in the home.

Samples, prices and full information sent promptly upon request.

CROWN CORK AND SEAL COMPANY

World's Largest Makers of Closures for Glass Containers



T SEALING IMPROVEMENTS IMPROVEMENTS CROWN BROUGHT YOU FIRST!



DEEP HOOK THREAD SCREW CAPS: The patented cap thread hooks *under* the glass thread of the container without side scraping or wedging. You get 50% to 100% more sealing pressure with the same amount of force—caps spin on faster—come off easier—production is speeded up—application costs are lowered.



VPO CAPS: A one-piece vacuum closure that utilizes the "top sealing" principle. Tiny lugs in the rim of each VPO cap hold it on the container with a springlike grip. Special rubber ring liner assures perfect vacuum sealing. Speed of application is limited only by speed of filling equipment.



SHORT FRICTION CATSUP COVER CAPS:

Their outstanding uniformity assures fast, trouble-free application. Their trim, tailored design improves the appearance of your package. They fit closely—are easily removed—snap back on for a snug re-seal. Indentations are so formed that they hold but do not lock.

CROWN CLOSURES

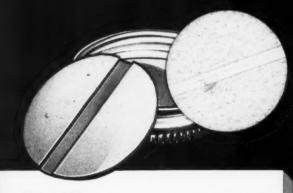
CROWN CORK AND SEAL COMPANY
BALTIMORE, MARYLAND
World's Largest Makers of Closures for Glass Containers



OROLAC LINERS: Made by bonding "Orolac" coated aluminum foil to white pulp. Has many of the advantages of a rubber ring, yet costs less. Tasteless, odorless, inexpensive and impervious to liquids and vapors. Especially suitable for certain food products, sweet wines, and whiskey not over 100 proof.



PLASTIC LINERS: Unequalled for the quality or the sturdiness of the wax coating used in the built-up surface. Provides unexcelled sealing efficiency for pickles, olives, mustard and other hard-to-keep products. Real insurance against shrinkage due to evaporation and returned goods.



VENT CAPS: An innovation in closures which has solved a troublesome problem for packers of products that generate gas. The patented Vent Liner vents at comparatively low pressure . . . minimizes excessive internal pressure during shelf life of the product . . . decreases hazard of damage to person or property.



SLIP RUBBER RINGS: Impregnated with a specially developed lubricant which works to the surface under pressure—prevents rubber sticking to jar. Thickness of ring seals off any irregularities on jar surfaces. Special rubber formula for mayonnaise, coffee and other hermetically sealed products.

CROWN CLOSURES are offered in a wide variety of types and sizes for every kind of glass-packed product. Included are CT Caps, Double Shell Caps, Mason Caps, Lug Caps, VPO Caps, and Short Friction Cover Caps... all made of the highest quality materials, on modern, precision machines and carefully inspected during each step of fabrication to insure cost-cutting aiformity.

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CROWN CLOSURES

CROWN

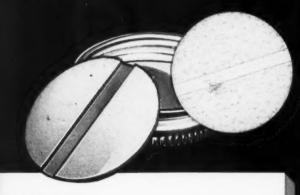
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With the emphasis on BFAUTY

Stilles. By Swindell MACHINE MADE OR HAND MADE PRIVATE MOULD OR STOCK PREMIUM QUALITY - BUT

NOT PREMIUM PRICES

Write for designs and quotations SWINDELL BROS. BALTIMORE, MD. 200 FIFTH AVENUE, NEW YORK ROBERTO ORTIZ, HAVADA

When you think of

bottles think of

windell

GROUP 4 VACUUM SEAL



Left: Whitecap vacuum side seal for pry-off finish. Right: Whitecap vacuum deep top seal for pry-off finish

Slip cover-cap for Mason jars, equipped with gasket



Top seal for thin, glass tumblers. Vacuum Whitecap



Anchor AH-N Side-seal vacuum cup with lift opener used with or without pry-off finish containers



GROUP 5 COMBINATION TYPES

Dose-cup. Aluminum. Affixed to top of bottle, over regular closure and held in place by screw thread. May be adapted for use as ordinary slip cover



Anchor Paragon two-piece catsup and chili sauce cap. Long skirt, screw type



Cellulose cap or band (Cel-O-Seal). Fits over any type of closure and shrinks tightly to the bottle neck





Top: Round lock top closure with inner paper seal. Used extensively for coffee cans. Bottom: Round sifter cap for cans containing talcum and other dry, free-flowing products



KIMBLE Individualized MOULDED GLASS CONTAINERS

BEAUTY UNSURPASSED BY IMPORTED BOTTLES

AMERICAN PRODUCTION ASSURES CONSTANT SUPPLY

Kimble INDIVIDUALIZED Moulded Bottlescreated by American designers and made entirely by American craftsmen-introduce a marked innovation in fine moulded bottles.

Combining the artistry of Kimble glass-craft with precision mechanization, these distinctive new containers offer designs that are unsurpassed in exquisite beauty and character. They are designed especially for YOU-

made to your own specifications to personalize YOUR OWN PRODUCT!

A NEW VERSION OF YOUR OLD PACKAGE Consult A RAPID ACCEPTANCE OF YOUR NEW PRODUCT Kimble

The Visible Guarantee of Invisible Quality



Canisters. Small aluminum tamper-proof cans with screw or plain re-closure



Open topped, tamper-proof aluminum cap used when re-closure is not desired





Left: Large lug cap with knurl, which is applicable to jars for all uses. Right: Filma-Seal paper type



Decorative slip or friction cover-cap with long skirt



Pelican cap. Large tam-per-proof aluminum seal over regular cork. Dis-engaged top serves as

drinking or measuring cup

Left: Cellulose cap or band (Wind - O - Band). Right: Viscose cap or band (Sylphseal). Effective type of self-sealing unit



Pull-strip cap. One-piece, tamper-proof cap made of aluminum. Opened by pulling weakened strip off in either direction



Upper left: Alseco foil tumbler cap. Crimped on. Also available in sifter (perforated) top. Upper center and right: Vacuum caps with tear-off tabs. Top seal may be provided with two tabs in aluminum or tin. Bottom: Goldy top seal. Tear-off type; aluminum; top seal



Safety cork. Tamper-proof aluminum seal is placed over regular flange cork. The seal is broken by pulling weakened strip off in either direction



Break-away cap. Made of aluminum and threaded on the bottle. Breaks open as top is unscrewed while base is held in place on locating plug



Alesco R-Overseal. tamper - proof, tear - strip type for metal cans. It is used as a secondary seal



Hoods or capsules of metal foil which cover the top, stopper, and upper portion of the neck of the bottle



Screw and lug caps with patented slip rubber rings vulcanized into cap. For vacuum seal and hermetic reseal



NEW RIMSEAL FOR TUMBLER PACKS

ARIDOR'S NEW RIMSEAL offers real consumer appeal!.. overwhich comes the strong housewife resistance to ordinary closures which experiments and reseals easily.

RIMSEAL opens and reseals easily.

weight, easy filling, results in production.

It is available. Handles easily in production.

Aridor's easyis available. Handles easily in production.

RIMSEAL is a worthy team-mate for FLIPSEAL . . Aridor's easyis available. Handles easily in production.

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THE PLACE - CHICAGO Co.

REPRESENTATIVES IN: NEW YORK PHILADELPHIA CINCINNATI ST. LOUIS JACKSON MEMPHIS BIRMINGHAM MONTGOMERY
ATLANTA NEW ORLEANS MONROE DALLAS HOUSTON DENVER SAN FRANCISCO LOS ANGELES

PACKAGING CATALOG

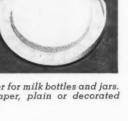
299



V. P. O. (vacuum pry-off) cap. Vacuum top seal for pry-off finish. Indentations in the side of the cap also pro-vide a mechanical lock to hold it firmly in place. This type closure makes an air-tight and water-tight re-seal



Flat top, rolled edge cap with knurl. Gasket lined



Two-piece deep screw closure. Air-tight or vacuum



Left: Whitecap double shell vacuum cap. Right: Band cap, two-piece vacuum. Band fastened by fold-over tabs



Two-piece Amerseal, either air-tight or vacuum seal



Two-piece single shell. Top fits over metal disc



Left: Alter-proof seal. An aluminum two-piece cap for liquor bottles. Upper part is a single shell screw cap; the lower an indented band which must be broken before the top can be removed. Right: Aluminum pilfer-proof cap of a single-shell screw cap with perforated extended side. Closure is twisted to break band



Gasket lined Amerseal, air-tight or vacuum seal



Gasket lined deep screw closure with rolled edge

GROUP 6-MISCELLANEOUS

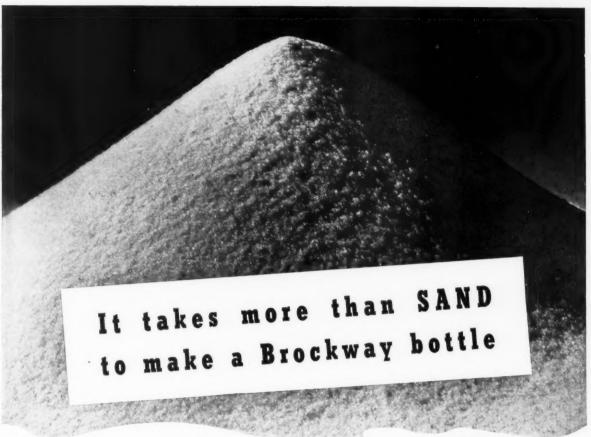


Left: Wing-nut closure for sealing cans containing ether, and the like. Right: Pouring spout, with screw tip, for small oil cans



Seal spout. An aluminum pouring spout. Made in a variety of sizes and shapes and applicable to both cartons and fibre cans

PACKAGING CATALOG 300



EVEN in Brockway's most modern glass container plants, you can't just mix, heat, and pour a batch of glass, and expect the kind of bottles that Brockway produces.

It takes the keen selection of the raw materials that make up the batch, the closest adherence to heating and timing, most rigidly accurate and perfectly finished molds—and most of all—the skill of experienced workmanship.

In Brockway bottles you get strength without excessive weight. You get a clearness of texture that adds "dressing" to your product. In stock designs, you get a wide choice of shapes and sizes to meet the demands of your product. And, if you prefer, we'll prepare special designs to give your product extra display, utility or salability.

Our representatives in principal cities will gladly counsel with you on your container problems.



SPECIAL DESIGN SERVICE without cost or obligation. Especially, if you are now using other containers, let us show you how the advantages of glass can be utilized for your specific product.

BROCKWAY GLASS COMPANY, INC.

BROCKWAY · PENNSYLVANIA

MAKERS OF Sani-Glas PRESCRIPTION WARE The Symbol of Quality



Left to right: Revolving sifter-dredge, for spice cans and slide cover for the rectangular top cans



Sifter. Slide-dredge, for spice and condiment cans



No-Kap. An adaptation of a type of cap originally used for collapsible tubes



Premium type dispensing closure for thick, viscous fluids





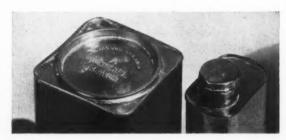
Pour-N-Seal cap and nozzle closure for oval pouring spout



Four dispensing closures incorporating a drop-pumping device with either a metal or plastic continuous thread closure. Plastic plunger closure may be obtained in colors



Dispensing type closures. Respectively, sprayer or atomizer, dispenser (continuous flow type) and dropper type dispenser. All these are of the "push-down" spring type



Left to right: Friction top, available with or without inner seal. Kork-N-Seal closure for cans. Available also for use with wide and narrow-mouth glass bottles



Left to right: U Press-It (inside pressure seal) with tearoff band. Newman closure, spun on. Pry off to open

Human Research

ARMSTRONG'S NEW APPROACH TO PROFITABLE PACKAGING

Human Research is Armstrong's new method of designing glass packages for you. Before the artist's pencil touches paper, Human Research tells him what people like and dislike about the packages common to your type of product. It is a design service that finds out what people do with your packages after they buy them. Where do people keep your package? How often do they handle it? Do they have any trouble getting all its contents? Would they like to save it for re-use? Do they want to pour from it? It's good business to know the answers to these and many other questions before you buy or redesign glass packages.

HUMAN RESEARCH is a service that gets the facts to help you build sales.

The packages below were designed with

the help of Human Research, and each one can tell a success story in its field. Let Human Research learn what people do with your packages; then let it give you designs to fit those uses, and your packages will be styled for sales success.

Other services are available to you at Glass Packaging Headquarters—a competent engineering staff and complete manufacturing facilities, a corps of experts to test your packages for sealing efficiency in Armstrong's Central Technical Laboratory, a selection of stock mold ware for various uses, and a complete line of closures for every sealing need. Get all the details by writing Armstrong Cork Company, Glass and Closure Division, 910 Arch Street, Lancaster, Pennsylvania.



Human Research HELPED DESIGN THESE SUCCESSFUL PACKAGES

Armstrong's Packages Are all



You can have food container designs as successful as these, tailor-made for you with the help of Human Research. The most modern improvements in equipment and glass making technique are employed to assure you uniform glassware whether you choose conventional or lightweight styles. Armstrong's designs are selling designs.

Armstrong's facilities are satisfying the needs of many of the country's leading drug and chemical manufacturers. Whatever your requirements are, Glass Packaging Headquarters can fill them with either a special design, or one of a wide assortment of stock bottles. Special closures, applicators, and droppers are also available.

Armstrong's complete facilities for design and production of liquor ware are serving some of America's leading distillers—helping to keep their sales in the upper brackets. The same design and manufacturing facilities are available to you, plus one source of supply for your closures and secondary seals (du Pont WIND-O-BAND seals).

ARMSTRONG IS GLASS



a Work in Every Package Field

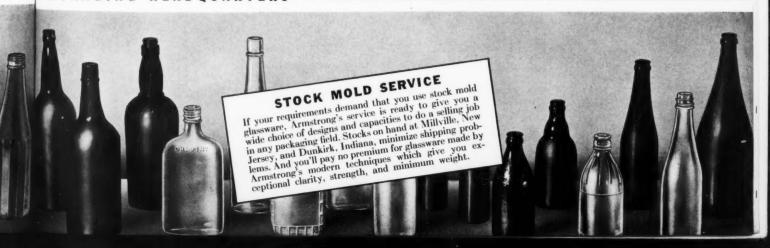


Bottlers like these know the value of good package design in increased volume and profit. Armstrong's HUMAN RESEARCH can design a beer or beverage bottle for you that will give you something extra in consumer appeal. You can take advantage of one source of supply for both glass and crowns, and solve your buying problem.

If feminine appeal is your cosmetic packaging problem, Armstrong's design experience in that field is perhaps the service you are looking for. Let Human Research tackle that tough merchandising job. It has helped design cosmetic containers that are making a lot of people buy, getting those necessary impulse counter sales.

Successful Human Research can be applied to any product packed in glass—or to any product that ought to be in glass and isn't. It's working today for products as diverse as ink and cleaning fluid, paste and pickles and pills. It can give you packages that are yours alone, packages that have the sales features people want and look for.

PACKAGING HEADQUARTERS



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THERE'S AN ARMSTRONG CLOSURE FOR EVERY SEALING NEED



ARMSTRONG CORK COMPANY

GLASS AND CLOSURE DIVISION



LANCASTER, PENNSYLVANIA

Hand made glass bottles

HE vast majority of all bottles used today are manufactured on automatic machinery. Glass is made in huge furnaces with materials being mixed by the ton. Molten glass is fed into huge automatic machines and blown accurately to conform to the shape of the molds within the machine. However, the ancient art of glass making still occupies a prominent—and in some respects an increasingly important—place in the packaging picture as a whole.

Where extremely fine work is essential and where limited runs of such work are required, hand made and semihand made glass containers are widely used. Such containers are particularly applicable in the perfume, talcum, bath salts, prescription, wine and liquor trades.

Until the start of hostilities in Europe, a limited quantity of French, Australian and Czechoslovakian glass falling in these categories was imported each year. Since September, 1939, however, American manufacturers of hand made glass have shown their ability to meet all the needs of the market and virtually no dislocations have occurred due to the cutting off of foreign imports. In fact, the probability may now be clearly seen that no extensive import trade will find a basis for existence after the cessation of hostilities, since domestic producers have so clearly demonstrated their ability to meet domestic requirements successfully.

In the process of making a bottle by hand, the glass





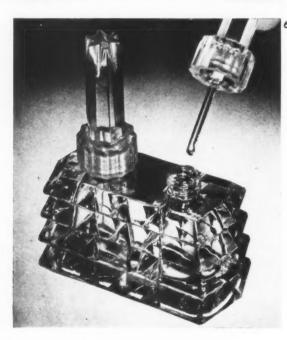


1. Clear, hand molded glass perfume bottle with glass stopper. Unusual triangular shape with slight details of decoration on stopper and at the base. 2. Intricately molded perfume atomizer bottle. Design of lines and points which radiate from the base give crystal-like and sculptured effect to the bottle. Closure is of gold color metal. 3. Simple bottle in pyramid shape. Walls are sturdy and bottom and neck are fully annealed for maximum strength. Stopper of glass has distinctive ridged design. Bottles like these are made of carefully selected materials entirely free from impurities. Photos Kimble Glass Co.

PACKAGING CATALOG







4. Hand made bottles equipped with threaded closure finishes. The decorative, unusual shape closures are of metal. 5. Hand blown bottles whose glass stoppers are also hand made. Bottle at the right has recessed and extended panels. 6. A two-cavity hand blown bottle with dual closure finishes and plastic stoppers which have glass applicators. Bottles such as these illustrated are produced in relatively short runs. Photos Carr-Lowrey Glass Co.

blower inserts the blowpipe, an instrument about 4 ft. long, into the pot of glass and withdraws a sufficient amount for the bottle, at the capacity required. A hand skilled in feeling the weights is imperative as too much glass would decrease the capacity of the bottles, while too little would increase the capacity, besides making it too frail for average handling.

The glass is then rolled on a smooth flat surface to eliminate any wrinkles that may have formed while the glass was being taken from the pot, leaving an almost perfect piece which is placed in an iron or steel mold. The mold is made in two parts, each containing a cavity of a size equal to half the size of the bottles with a bottom plate for a base.

When the mold is closed around the glass, the blower sends sufficient wind through the pipe to spread the glass evenly against the walls of the cavities, forming the bottle. The mold is opened immediately and the bottle is taken out with pincers, and weighed. The necks are reheated so that a smooth open mouth and a proper finish can be formed with a tool.

If the bottles are allowed to cool rapidly, they become extremely brittle, causing them to break from the least vibration, so they are placed in slow moving lehrs that cool them gradually, giving them the proper temper.

The bottles that pass inspection have their stoppers ground-in and tied to the necks to insure against the possibility of stoppers being interchanged, as this would cause leakage and evaporation when the bottles are filled with perfume.

While this description of the process is basic, it is susceptible to virtually infinite variations to meet the very specialized requirements of differing designs. For instance, hand made bottles with threaded necks have recently been placed upon the market. These necks are made accurately in accordance with Glass Container Assn. specifications to accommodate standard metal or plastic closures. Thus the container partakes of the advantages of the hand-blowing process, while at the same time achieving a uniformity of closure finish which is most commonly associated with the automatic glass producing equipment.

Glass for hand blown bottles is usually made of very carefully selected and blended materials fused in small batches in covered pots free from the impurities of factory air. Extremely delicate and sparkling effects can be achieved because of the high quality of the glass utilized, as well as because of the interesting effects in design attainable by hand blowing.

The factor of difference in cost between containers from stock molds and from private molds shows a situation for hand blown bottles quite different from that for bottles made by machine. Since only one mold is used by each blower, and since hand blown bottles are produced in relatively short runs, the cost of molds for private mold bottles is generally lower when they are made by hand. This factor alone, however, would seldom be sufficient to swing the decision one way or the other in favor of hand blowing as against machinery for the making of bottles.



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CAMBRIDGE CHICAGO OAKLAND MONTREAL

GOLD SEAL CAP COMPOUND

PACKAGING CATALOG

309

Closure liners and sealing compounds

HE liners used for package closures are highly important in insuring the delivery of an acceptable package to the consumer. The liner is seldom examined unless inefficient, defective or improperly chosen. Considerable attention must be paid to this important subject so that the quality, quantity, potency or flavor of the packaged material, as originally prepared, is retained. The liner is equally as important as the outward appearance of the closure of which it forms a part, and of the actual container. A well-designed container and closure accompanied by an attractive label may be completely spoiled by a cheap or poorly selected liner.

In considering liners, they may be divided into two classes, namely, simple and duplexed. By simple liners is meant a liner of a single material, treated or untreated. A duplexed liner consists of a backing faced with a material which is resistant to the product, the facing usually being adhered to the backing.

SUGGESTIONS FOR LINERS

	Tinfoil	Vinylite	Panaseal Raolin	Varnished Paper	Waxed	Rubber	Special
Dry Powders		x	x	x	x		
Mineral Acids Concentrated Weak		?	?				x
Alkalies			1				
Concentrated						×	
Weak		?	?			x	
Solid		x	x		?		
Alcohol							
U. S. P.	x	x	x				
Denatured	×	x	x				
Bleaching Solution		x	x			×	
Adhesives							
Liquid		?	?	?			×
Solvent type	X						
Cosmetic Creams		X	X		?		
Corn Cure			1				X
Foods							
Dry Olive		X	X	x	x		
Relish		X	×	x		X	
Mayonnaise		2	2	X			
Processed				x		x	
Liquor	x	×	×			A	
Nail Polish	X	x			1		x
Nail Polish Remover	x		1				X
Oil	-						-
Animal	-	x	2	x			
Mineral	×	x	5.5.5	x			
Vegetable	x	x	2	x			
Essential	x	_	'	-	1		×
Organic Solvents	x		1				-
Perfume and Toilet Water	x	?	?				
Pharmaceuticals	?	?	5	?			
Wine		I	×	I		?	

x indicates that the facing can be used with these products. Question mark indicates that the liner *probably* can be used, depending upon ingredients used in formulation of product.

Simple liners

Pulpboard	White felt
White waxed paper	Waxed saturated pulp
Saturated pulp	Plastic wax
Natural cork	Rubber (various types)
Cork composition (vari-	Special solvent (vari-
ous types)	ous types)

The duplexed liners, as previously stated, consist of facings and backings. Different combinations of facings with backings are possible.

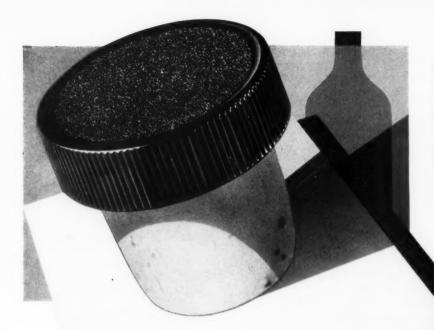
Duplexed liners

Facings
Waxed paper
Varnished paper
(various types)
Vinylite
Panaseal or Raolin
Metallic foils-tin,
aluminum and lead

It is most difficult, in a general presentation such as this, to state specifically what type of simple liner or duplexed liner should be used for various packaged products. Therefore, general comments will be made. The closure producers will gladly test samples of products and furnish the manufacturer with recommended types which will vary, depending upon the closure, the container and the shelf life, price range or physical properties of a given product. The choice of the liner should not depend on price, but be primarily based on the ability of that liner to satisfactorily seal the product. Naturally, the most economical liner will be used, but a doubtful liner, at lower price, may be a poor economy.

Plain liners

Plain pulpboard and white felt can be used for retaining products which are dry and non-hygroscopic. Where powders, pills or capsules are being packaged, which are only mildly hygroscopic, white waxed paper, saturated pulp or waxed saturated pulp can be used, especially if a large diameter cap is being supplied. Cork composition will protect hygroscopic products and finds quite general use in the narrow-mouth package field, either plain or waxed. Natural cork, due to its high cost, has not found general use and has been supplanted by the cork compositions. Rubber liners may be supplied in various types, such as white, red, black or "transparent" pure gum. The rubber materials are quite generally used for alkaline products, such as cuticle remover, ammonia and the hypochlorites, for mold acids and for tincture of iodine. Pure gum rubber is generally supplied on solutions used for injection purposes.



Mundet Molded-Top Corks can be obtained in standard

diameters in stock design or

made-to-order to conform to

specific needs.

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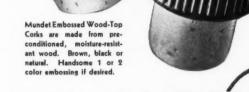
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inquiries to Mundet Cork Corporation, Closure Division, 65 S. Eleventh St., Brooklyn, N. Y.

LOSURE SERVICE

MOLDED CORKS • MOLDED SCREW CAPS • EMBOSSED WOOD-TOP CORKS • CROWNS • PLAIN CORKS

Special solvent liners have been developed especially for caps with posts or wells where a washer type of liner is indicated, these liners being used with products containing organic solvents, such as nail polish, corn cures, solvent adhesives, etc.

Duplexed liners

Duplexed liners, as already stated, consist of a backing and a facing and are the liners most generally used for closure purposes. Naturally, they are more expensive than plain or waxed pulpboard or newsboard, etc., but they do have much better sealing properties if the facing is correctly chosen. The backings consist of newsboard, pulpboard or cork compositions. The supply of newsboard is more plentiful than that of pulpboard and it is indicated for use except where a white backing is needed to maintain a light-colored appearance with a more or less transparent facing, such as waxed paper. In metal caps, double insertion is often used, in which the backing and facing are not combined, but the superimposed materials are punched directly into the cap. In molded caps, it is customary to adhere the facing to the backing with a tasteless, odorless material.

Several different grades of cork composition can be supplied, such as those with either large or small particle cord. Different degrees of resiliency may also be produced, using a dense or less dense composition and the binders of the composition may be either protein or resinous in nature.

White felt, tan felt and gray felt may be used as backings, although their use is limited. Gray felt has practically completely passed out of the picture except for technical products such as paints, varnishes and thinners, while white felt is sometimes used for pharmaceutical products, especially for pills and dry powders.

Quality waxed paper is the cheapest type of facing and can be used for powders and non-hygroscopic materials. This type of facing does not make a good liner for aqueous products, oils, preparations containing vinegar and the like.

The varnished papers can be supplied in several types, such as pale yellow oil, regular yellow oil, black alkali, etc. The varnished papers are used quite generally for pharmaceuticals and food products. However, especially for pharmaceuticals, tests are needed to determine what type can be supplied. The varnished papers are lower in price than the metallic foils, Panaseal Raolin, or Vinylite and, for certain products, perform in a satisfactory manner.

Panaseal and Vinylite are tasteless, odorless types of facing mounted to white sulphite paper. They are generally better than the varnished papers, although they are attacked by certain organic solvents and essential oils. Vinylite is probably the most nearly universal liner developed up to this time.

Metallic foils, tin, aluminum and lead may be used with organic solvents. Lead, of course, is used only for technical products such as sulphuric acid, varnish, varnish thinners, lacquers and the like. Aluminum foil finds use as a spot for beer crowns and can be used for

certain organic solvents. It cannot be used with wine or whiskey due to precipitation of tannins present in these products. Tinfoil is the most generally accepted liner for organic solvents, whiskey and essential oils. It is also used for many pharmaceutical products which are not acid in nature and which do not contain salts which might corrode tin. The duplexed liners are not indicated where a washer type gasket is supplied in a cap which contains a well or post, due to the fact that, with this type of liner, the liquid may pass between the post and the liner, saturate the backing and permit evaporation loss. Where the product is not difficult to hold and the bottle finish good, pulpboard or newsboard gives satisfactory results when used as a backing. Where the product is difficult to seal or the bottle finish slightly irregular, the added compression and recovery of cork composition produces the best type of backing with the safest sealing efficiency.

Special treatments may be applied to the duplexed liners, such as paraffin wax or high melting point wax. These treatments are used to improve the moisture-sealing characteristics of the liner. Casein coatings may be applied either to the varnished papers or metallic foils to help prevent the seepage of thin oils. Food products, which are not vacuum packed, can quite generally be sealed with varnished paper and newsboard as a backing. In certain cases, it is advisable to apply a wax coating to the varnished paper. For vacuum packed foods, a rubber gasket is quite definitely indicated either as a side seal gasket or as an inside gasket adhered to the cap top.

The foregoing refers specifically to screw caps and wide-mouth closures. Crown caps are used for carbonated beverages, citrate of magnesia and medicinal waters. Cork compositions are quite generally used as liners in crowns, either plain or wax treated, in the quick-selling class. For delicately flavored materials, such as carbonated water, club soda, table waters and the like, Vinylite, Panaseal or tinfoil spots are quite generally used. For ginger ale, a varnished paper spot is customary and for export beer, aluminum as a spot has been found to produce a superior type of closure.

In considering the proper choice of liners, past experience can be used as a guide. That is, if a liner has successfully sealed a product for many years, it is wise to go carefully before changing to a cheaper type of material. In introducing a new product or in changing liners, the cap manufacturer should be consulted for liner recommendations. Many concerns will then wish further to check the cap manufacturer's suggestions in their own laboratory before the final adoption of a particular type of liner. The liner, generally, is the least expensive part of the package, but if failure occurs in the liner, the product does not reach the consumer in a satisfactory condition. Choose, therefore, a safe liner even though it might be slightly higher in cost.

Closure sealing compounds

Sealing compounds are used to provide a resilient gasket to make possible a tightly sealed glass or metal vacuum container. Most sealing compounds are made from

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specially compounded latices, i.e., water emulsions of rubber which are non-inflammable and non-toxic and which eliminate the fire, explosion and poison hazards of some of the compounds formerly in use. These compounds are "flowed-in," in liquid form, directly into a closure groove and dry to form an integral part of the cap or cover, with a smooth sealing surface. First adopted by tin can manufacturers for lining can ends, they have, in more recent years, found wide application for glass, paper and steel container closures as well.

Different formulations are utilized for the various types of containers and closures. Thus a sealing compound, used for glass, must give a heavier gasket than that used on a tin can to take care of irregularities in the surface of the glass. Modern equipment has been developed which makes it possible to apply the compound to the caps efficiently and economically at volume production speeds.

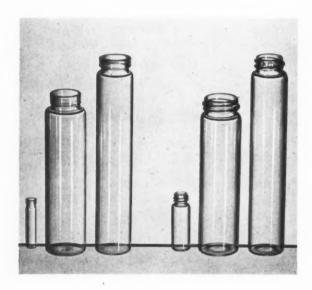
A carefully controlled liquid virgin latex, compounded with suitable inert filler materials, is forced in accurately measured quantities into the cap as it is rotated under a nozzle. The closure is then passed through drying ovens which evaporate the liquids and leave a firm resilient gasket as an integral part of the cap.

For pails and steel drums, the same method of application is used. But here another gasket material is necessary, being specially compounded to supply the greater bulk required by the volume of the cover groove and also to give a softer, more resilient and more sponge-like gasket that will deform to make a tight safe seal when the cover is crimped onto the pail.

Flowed-in gasket liners are also used for the protection of products from the evaporation of essential and costly solvents. They are utilized, for instance, in a number of cases, by manufacturers of creams and cosmetic lotions where utility and consumer appeal would be destroyed if the product dried out during the relatively long period which may sometimes occur between shipment to the retailer and consumer sale.

Glass vials, tubes and ampoules

by H. V. Wallace



Left: Patent lip glass vials available in both short and long styles and in sizes ranging from a quarter of a dram to 8 drams. Right: Screw Cap glass vials available in both short and long styles and in sizes ranging from half a dram to 8 drams. Other sizes may be made to order. Vials, such as these, are used for packaging liquids, powders or tablets, either for sampling or as a permanent sales container. Types of neck finishes may be varied to order.

LASS vials are widely used for packaging liquids, powders and tablets where the requirement is for a small, convenient and light container, either for sampling or as a permanent sales package. Glass ampoules are accepted in the pharmaceutical industries as an ideal means—in many cases, the only means—of achieving complete sterility over long periods of time plus convenience in use. Glass droppers are the traditional means of portioning and dispensing medicines and other liquids which must be withdrawn from the container in a sanitary condition in a limited quantity.

All three classes of containers are made in basically the same manner from glass tubing drawn by automatic machines and subsequently fabricated by precision machines. The use of machinery provides an evenness of wall, eliminates distortion of vision through the walls without sacrifice of strength.

Standard forms of vials, tubes and ampoules are described in the following illustrations. The user is not, however, restricted to these forms. Vials can be tabricated in intermediate sizes and with flat or oval bodies and rounded as well as flat bottoms. Neck finishes can be varied to order and vials can be obtained open at both ends or other variations. Such special types are available with a minimum of tool and jig expenses, since the machinery which fabricates glass tubing and vials is extremely adaptable. This serves to permit of speedy delivery of special types. Standard types are usually available from manufacturers' stocks.

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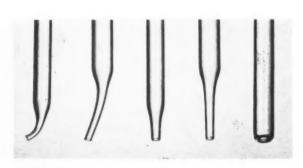
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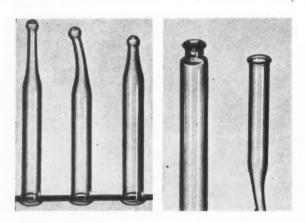
PACKAGING CATALOG

Since vials can be adapted to practically any type of closure, there is no restriction on the designer's ingenuity in "dressing up" the package. As for labeling, either metallic or paper labels can be used or, if desired, the glass itself can be decorated by printing suitable inscriptions and designs directly on to the surface. The printing ink can be an air-drying enamel, where permanency is not necessary, or it can be a colored ground glass in suspension which can be fused into the vial surface.

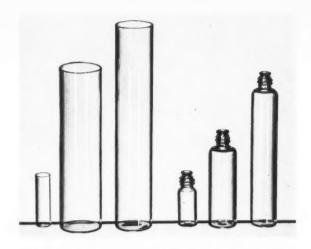
The smallness and light weight of vials make them particularly adaptable for use on display cards to which they are frequently stapled or attached by rubber bands. Vials are also used, on occasion, as inner containers in complicated assemblies. For instance, a well-known maker of glues and pastes uses a glass vial as a waterwell and brush holder in the center of each jar of library paste. Manufacturers of photographic chemicals frequently insert a vial of one chemical into the container holding another chemical so that the photographer may mix the two at the proper time.



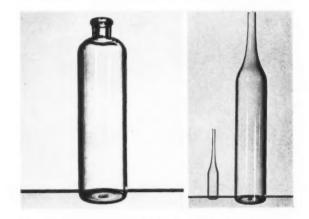
Typical finishes for the points of dropper glasses. Outside diameters range from 4 to 11 mm. Body lengths are from 19 to 175 mm. Other types can also be made to order



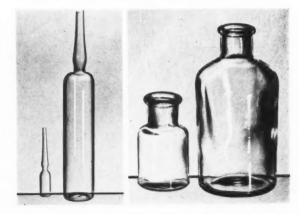
Left: These typical point-finishes supplement those pictured above. Other types may be made according to specifications. Right: The flanged and tooled types of nipple ends on the dropper glasses shown in the two preceding illustrations. These dispensers vary little in type.



Left: Shell glass vials available in both short and long styles in sizes from ¼ dram to 8 drams. Right: Glass applicator vials made with long neck and small opening to permit dispensing of liquids in small amounts. Screw thread closure finish. Special sizes are made to order.



Left: Glass serum vial available in standard flint and noncorrosive glass in capacities from 1 ml. to 25 ml. Right: Standard ampoules with regular pulled neck available in sizes 1 ml. to 50 ml. Ampoules assure complete sterility.



Left: Standard ampoules with constricted neck available in sizes from 1 ml. to 50 ml. Right: Serum bottles of the molded, U. S. Army Medical Corps type. Available in 15, 30, 60 and 100 ml. sizes. All photos Kimble Glass Co.

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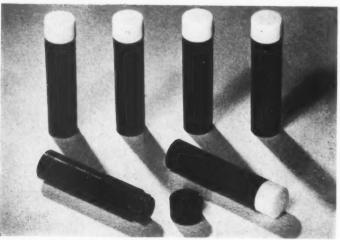
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Plastics for packaging

HE word "plastics," as used by the industry, is an arbitrary term rather than a scientific one. Theoretically, a plastic material is one which under pressure will change its shape and subsequently upon release of the pressure will retain its new shape. By usage, however, the word is confined to organic materials exclusively and does not include metallic or mineral compounds. In addition, certain substances such as natural rubber are not included for purely arbitrary reasons, although synthetic rubbers are often included under the scope of the term. Since an essential feature of the industry is the mechanical nature of its technique, resulting in molded shapes of rigid or semi-rigid consistency, the term generally does not include such closely allied products as rayon and other synthetic fibres, photographic film, artificial leather and smokeless powder.

All plastics derive from organic matter of which a





PACKAGING CATALOG

fundamental substance is carbon. By the method of their derivation, plastics may be roughly classified into two groups: Those which are chemical modifications of such natural products as cellulose, and those which are synthetic and represent a reorganization of the basic chemical elements into entirely new forms.

Exemplary of the first type is cellulose nitrate, the first of the plastics and one of the best known. It is produced by treating alpha cellulose or cotton linters with nitric and sulphuric acid. The resulting cellulose nitrate, or "pyroxylin" pulp, is washed to remove excess acid and boiled to achieve stabilization. At this point, the cellulose nitrate still retains its fibrous form and to produce the final plastic it must be treated with alcohol and then kneaded with camphor or equivalent plasticizers. It is then rolled and calendered into sheets which are consolidated by heat and pressure into solid blocks.

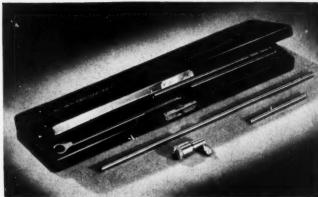
The resultant sheeted product is almost transparent, but it can be made opaque, and in both forms can be produced in a variety of colors by the addition of dyes or pigments. Cellulose nitrate in the final form is readily moldable and can be easily fabricated. It is water-resistant, tough and flexible. Its greatest drawback is its high inflammability. In this process, a chemical union is obtained between a large and complicated cellulose molecule and a small nitric acid molecule. The resultant molecule is only slightly larger in weight and size than the original cellulose molecule, but it has changed sufficiently in chemical character so that it can be dissolved in special solvents to obtain a plastic. To this group belong the other cellulose derivatives.

An example of the synthetic process is polystyrene. This is derived from a simple liquid styrene which is made from benzene. When heated under carefully controlled conditions, a large number of its molecules or monomers join together to form one very large molecule or polymer. The resultant product is a solid plastic, and the process is called polymerization. Other similar polymerized plastics are vinyl and acrylic acid resins.

A second method of classifying plastics is functional and stems from properties which are of great importance in producing the finished product. They can be segregated into two types—thermoplastic and thermosetting. Thermoplastics become soft under heat and pressure, harden upon cooling, and can always be softened again

1. This triple-sectioned, militaristic appearing lipstick holder is molded of phenolic plastic by Norton Laboratories, Inc. 2. Stock vials in a brown mottled plastic with contrasting white plastic screw-on caps. Molded by Wheeling Stamping Co. Phenolic materials for containers are supplied by Durez Plastics & Chemicals, Inc.





3. Fishing line reel of cellulose acetate, has two molded parts constructed to lock together in order to form the bobbin upon which line is wound. Material by E. I. du Pont de Nemours & Co., Inc. Molded by American Molding Co. 4. Phenolic case for 8-piece micrometer set. Material by Durez Plastics & Chemicals, Inc. Molded by American Molding Co. 5. Cellulose acetate book match case. Material is supplied by Celanese Celluloid Corp. Molded by Anfinsen Molding Service.

under sufficient heat. Thermosetting plastics also flow under heat and pressure during their molding, but, after hardening, they cannot subsequently be liquefied.

Plastic materials now occupy an accepted place among the basic materials of packaging. In the articles which follow, the different types of plastic materials are discussed in some detail. It is necessary, however, for the prospective user of plastics to recognize certain fundamentals before considering which type of material might best suit his particular needs. First among these fundamentals is the fact that plastics are sturdy, long-lived materials best suited to use as containers or container parts where continued use after the product has been sold is to be anticipated.

Long life is but one of the many packaging advantages offered by plastics. A second and equally important factor is the attractiveness of plastics and the variety of effects which may be obtained. Plastics of one type or another may be had in every shade of color, also pure white and black. They can be either transparent, translucent or opaque. Plastics may be fabricated into an infinite variety of shapes and be decorated in a number of ways, including roll leaf stamping and other forms of printing.

From the point of view of cost and the results achieved for a given expenditure, plastics suffer, to a degree, from limitations that do not apply to all other packaging materials. The plastic raw materials vary greatly in price among themselves, but all of them are relatively expensive materials. For most plastics which are fabricated by a molding process, a substantial charge must be added to amortize the expense of molds. Thus, most plastics are too expensive to utilize on short runs of packages for limited production products. The high amorti-



zation charge for molds plus the relatively high cost of materials make other materials frequently more desirable when the run of packages is short.

Lengthen the run, however, and a different situation begins to arise. The amortization charge per piece drops proportionately. The economics incident to the elimination of hand fabrication steps begin to become apparent and as a run increases, a break-even point appears (varying, of course, with each plastic package) where the plastic competes with other types.

Not all plastics fall into this category. Some plastic containers and a larger number of displays are fabricated from sheet, rod and tube material. Here die costs are eliminated and hand labor costs, which do not decrease particularly much with an increase in the length of a run, are substituted.

In the case of plastic closures and of certain plastic containers, the mold cost factor has been largely eliminated by what amounts to the cooperative use of molds. Mold closures and some packages are available from stock molds owned by the plastic molder or closure supplier. Thus the package user may purchase but a small portion of the total output from these molds with the knowledge that the amortization cost on the mold has been spread over a very large number of units. As against this advantage, however, he discards the use of a box or closure exclusively for his own packages.

Thermosetting compounds

HE thermosetting plastics—i.e., those which once molded change their chemical construction and assume a permanent unchangeable form—include a number of subdivision groupings. For the general purpose of identification, the two major groups of thermosetting plastics are phenol-formaldehyde molding compounds and urea-formaldehyde molding compounds.

When these phenolic plastics first made their appearance, they found quick acceptance by the buying public. Most people liked plastic articles—a great enough incentive to cause any merchandiser to investigate their use. When they did, they found in this phenolic plastic a material that had exceptional designability—that could be formed into almost any shape or design-that was available in many colors. The finished articles came from the mold ready to use with a high lustre molded in that did not wear or wash off, would not tarnish or rust. They were poor conductors of heat or cold and had excellent mechanical qualities such as light weight with great strength, resiliency to shock and low density. Above all, buyers found costs to be comparatively low. They found a few disadvantages which it is well to point out for comparative purposes. Consider closures, for instance. In the past a standard material was used which had a slight odor, was somewhat resistant to acids and mild alkalies, had little non-bleeding and bleaching qualities, was not particularly flexible from the molder's standpoint and did not cure fast enough for low cost production runs.

Today, the buyer finds none of these disadvantages. Phenolics are available today that are completely odorless, that have great resistance to acids and mild alkalies,

that are non-bleeding and non-bleaching. He finds practically any color except certain pastel shades in the thermosetting phenolics. In the opaque thermosetting group, he finds richer or denser blacks brought about by improved dvestuffs. He finds far greater strength and durability. And from the cost standpoint, he enjoys lower prices in the thermosetting phenolics. This is because of improvements in manufacturing, molding machinery and more flexible materials. Molding materials have recently been put on the market which may be automatically stripped from the mold while hot-a tremendous advance over former materials. Also, a material has been formulated which has cut down cure time in the press from around eighty seconds to thirty seconds. It's quite easy to realize what these two improvements alone have meant from the cost angle on comparatively large production runs.

There are several factors which the packaging buyer should give heed to when considering a phenolic plastic container or closure. Plastics are generally impractical for very small runs unless the item packaged is in the higher priced group where finery in dress can be well afforded. There are, of course, hundreds of stock molds available through the many custom molders. These can often be employed to great advantage—even for comparatively small runs. Generally, however, a private mold is highly desirable to permit individual design and when considering this mold, there are a few principles which may be followed to advantage. The first step really would be to call in a custom molder or a service engineer from one of the materials manufacturers who will go over these and other points carefully. Design,



1. Molded urea holders glorify the Bab-O can into a decorative household item. They are available in red, blue, green and ivory to slip over the tin cleanser container. Rubber closure base prevents scratching or staining. Molded by Mack Molding Co. Material by Plastics Division of the American Cyanamid Co.

320 PACKAGING CATALOG



INDUSTRIAL PACKAGING. As proven by this box for a micrometer set... Durez can bring many hidden assets to a package... such as high impact strength, dielectric strength, durability, moisture, heat, acid and oil resistance!

DUREZ Plastics for tomorrow!

plastics have an enviable record for making possible package designs that require complicated, precision molding. As you see here, this vial cap is not removed. A slight twist brings two openings in line so that tablets may be tapped out.



DISPLAYS. Functional excellence becomes an integral part of your package when you mold with Durez. For example, this display is more than an "eye-catcher," it serves as a compact counter size flashlight department!



CLOSURES. One or a million... molded Durez caps and closures are uniformly perfect. One-piece molding assures mass production economies... and plastics' smart sheen lends new sales appeal to thousands of products.

THE FUTURE will see Durez playing the same important part in packaging that it has in the past—ever since it introduced plastics to closure manufacturers years ago.

Today Durez production is being absorbed by Defense priorities—even the additional production which only recently was put into action.

Because we believe in a greater tomorrow, because the qualifications of versatile Durez plastics have met packaging problems so well before, because we are preparing Durez plastics to meet such problems even more efficiently...our engineering staff is at your service *now*.

In your plans for tomorrow, consider Durez. Sales manager, designer, engineer—everyone who has a hand in guiding a new product to the consumer can find logical reasons for considering and adopting Durez. Here are a few of the hundreds of Durez users—proof of the job Durez has done ... and will do again.

DUREZ PLASTICS & CHEMICALS, INC. 700 WALCK ROAD, NO. TONAWANDA, N. Y.

Abbott Laboratories
American Chicle Co.
American Safety Razor Corp.
Elizabeth Arden
Armstrong Cork Co.
Harriet Hubbard Ayer, Inc.
Barbasol Co.
Bausch & Lomb Optical Co.
Bausch & Lomb Optical Co.
Bourjois, Inc.
Bristol-Myers Co.
Campana Sales Co.
Carter Ink Co.
Carter Ink Co.
Clark Bros. Chewing Gum Co.
Clark Millner Co.
Coljate-Palmolive-Peet Co.
Coty, Inc.
William C. DeMuth & Co.
DeVilbiss Co.
Elgin National Watch Co.
F. W. Fitch Co.
Gillette Safety Razor Co.
Gorham Co.
Barbara Gould
Hickok Mfg. Co., Inc.

International Tool Co.
Knapp Monarch Co.
Lambert Pharmacal Co.
Larsen Baking Co.
Lehn & Fink Products Corp.
Longines Wittnauer Watch Co., Inc.
MacGregor Instrument Co.
Mallinckrodt Chemical Works
Merck & Co.
National Distillers Products Corp.
Northam Warren Corp.
Norwich Pharmacal Co.
Owens-Illinois Glass Co.
Parke-Davis & Co.
Parker Pen Co.
Pioneer Suspender Co.
Ray-O-Vac Co.
Schenley Bros. Corp.
E. R. Squibb & Sons
Stanley Electric Tool Division
Towle Mfg. Co.
Ward Baking Co.
J. B. Williams & Co.
Zonite Products Corp.

DUREZ PLASTICS & CHEMICALS, INC.

PLASTICS THAT FIT THE JOB





2. Box for face powder utilizes urea materials in shell-pink tint. Material by Plaskon Co., Inc. 3. Manicure set in a phenolic plastic case which simulates a top hat. Lid is hinged—a convenient display feature. Material by Bakelite Corp. Molded by Terkelson Machine Co.

naturally, is of the greatest importance. Designing for plastics, that is from the standpoint of making finished blueprints, is not at all like designing for metal stampings or castings, for example. Actually, the best advice is to disregard what you may know of these because the characteristics of plastics are entirely different.

If an article requires strength throughout, there are several methods of securing it. Domed or hemispherical shapes are stronger than flat topped ones. Fillets at corners or filleted ribs are advisable. Extra thickness of material at points of stress may be obtained by beading or Attachment or assembly inserts reinforcing ribs. should be at filleted corners if at all feasible. This helps to keep "flow marks" from the molding operation where they show least. Shapes that call for loose sections in a mold to obtain undercuts should be avoided if possible for economical molding. Small side holes can often be drilled and large ones continued to the top to draw straight. Ribbing can be used to hide "flow marks" under the hole. Threads can be molded into round parts and, by means of loose mold sections, into other shapes. In so doing, the wall thickness should be figured from the inside of the thread instead of overall. Very sharp edges may be obtained, but are generally inadvisable from the handling standpoint and it is best to "break corners" slightly. Stippled effects and sharp-edged lettering sometimes cause sticking in the molding operation. Fine, straight draw ribbing and round edge lettering will

definitely assist in eliminating this possibility. Incised lettering and design in plastics mean higher die cost than raised lettering. When incised lettering is most desirable, it is best to employ a narrow style if such lettering is to be wiped-in. Double or triple line lettering is better for wider letters because there is less likelihood of the pigment being wiped or worn off. "Low" bas-relief designs and letters catch highlights as well as do high relief decoration, yet are more easily kept clean.

Generally speaking, anything that can be engraved in steel-can be molded on the surface of a plastic piece. Relief and intaglio sculpturing, inlays of metal or other contrasting materials, decals, labels, branding are the most commonly followed methods of marking plastics. Incidentally, the field is still wide open for smart use of other materials as components of the plastic piece. Leather, real or imitation, wood, rope, canvas, cloisonne, printed papers, cork, laminated materials, glass, reed, fabrics can all be combined with plastics for new and strikingly unusual effects. Actually, so little has been done along this line that it does not seem unreasonable to predict that a swing in this direction would result in materially increased sales of almost any item so packaged.

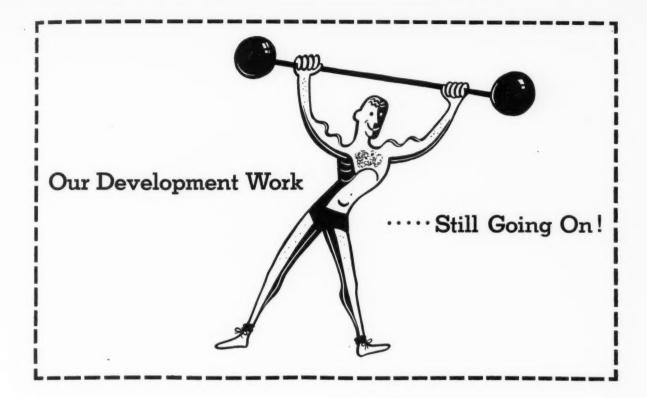
Urea plastics are of the molding type and are available in lighter shades of color than most of the phenolic group. This is because urea syrup, before the condensation process which reduces it to powder has taken place, is a water-clear liquid. It, therefore, gives full value to pigmentation and even pastel shades may be definitely controlled. Even white and ivory are common in ureas. To the manufacturer whose package depends upon daintiness of color for its selling appeal, urea may be the ideal molding compound, provided, of course, that its chemical properties are suitable to the job. Although higher in price than the phenolic compounds, except those lighter shades recently introduced, this advantage of color and translucency is often worth the difference in many applications. Urea moldings are insoluble and inert, resistant to greases, oils and solvents. They have no taste or odor and there is little or no tendency to show dirt even with constant handling.

Ureas have been used widely for tube and bottle caps because their broad range of colors offers a distinctive note of attraction while goods are on display. They are frequently chosen for better harmony with labels than would be possible with dark colors. They are especially suitable, too, for intimate use in the boudoir and bath and for that reason have found general favor in packaging cosmetics and toiletries.

Ureas are often used in conjunction with plastics of the phenolic group. Their gay colors contrast pleasantly with the brilliant blacks and dark shades of the less expensive material. Urea covers of ivory or pastel shades create a harmonious ensemble with the smooth lustrous finish of black phenolic boxes and jars.

Urea moldings combine harmoniously with the newer transparent resins providing the color they, in themselves, lack. Rich colorings supply a background of warmth and appeal which accentuate advantageously the cold clarity of the transparent part.

322



NO matter what high—or low—levels production may reach the development department keeps working on new ideas.

They're the boys with their eyes on the future. They plan for new materials and new applications. They take ideas and blueprints and work them into cold steel and hot molding powder. They're the people you should learn to know if you're thinking plastics for now or later.

"A Ready Reference for Flastics" written for the layman, is now in a new edition. If you are a user, or a potential user of molded plastics, write us on your letterhead for a copy of this plain non-technical explanation of their uses and characteristics.





Thermoplastic compounds

HERMOPLASTIC materials available for packaging purposes include cellulose acetate, cellulose acetate butyrate, acrylic resins, co-polymer vinyl resins and polystyrene resins. Within this group are presented an almost infinite range of colors as well as wholly transparent water-clear resins.

The thermoplastic materials are so called because they soften under the application of heat and harden at normal temperatures. The molding reaction is a purely physical phenomenon and can be reacted over and over again. While this facilitates their formation into closures, containers and container parts, it precludes their use in applications where heat in substantial quantities will later affect the molded article. The materials are both injection and compression molded and, because of their wide range of colors, lend themselves particularly to packaging applications. Within the last year or two, numerous packagers have found it possible to take advantage of the transparency available in certain of these materials to produce sturdy, rigid containers or container parts which could be seen through, and through

which a view of the product could be had without requiring the opening of the container.

The materials as a group lend themselves well to finishing operations and have a toughness when finished which well suits them for use on threaded closures and similar parts. They are resistant to breakage to a high degree and thus further well suited for packaging.

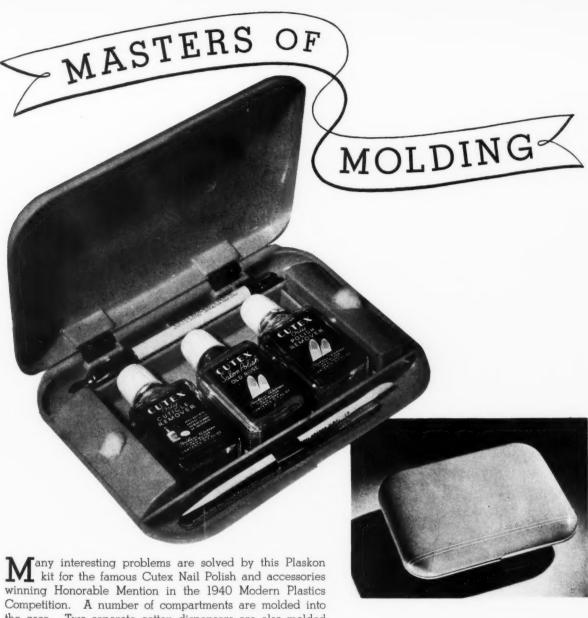




1. Compacts of transparent acrylic resin in various colors—tortoise, tourmaline, sapphire, ruby and amber. Molded by Metal Specialty Co. 2. Humidor with cellulose acetate lid. Material by Celanese Celluloid Corp. Molded by American Molding Co. 3. Cellulose acetate wedding and engagement ring boxes. Material by Tennessee Eastman Corp. Molded by Standard Novelty Box Co., Inc.



PACKAGING CATALOG



the case. Two separate cotton dispensers are also molded and snap into the bottom half of the kit. So accurately are

these parts molded that no device is needed to hold them in place other than rigidity of the material itself. Extra strength is built around the hinges to allow of much opening and closing without damage to the case.

The design itself, is unique. The case is flat and streamlined, fits easily into a handbag or traveling bag. The name "Cutex" and two lines are the only decoration—molded and then brushed with white. The entire kit is of a lovely soft blue Plaskon. An interesting opening arrangement may be noted. The rim of the base and the rim of the lid do not quite meet around the edge. Thus, one may open the case easily by holding one side and opening the other.

Norton has long been famous for fine work in all plastics. We are thoroughly equipped, competently staffed. The foremost producer of plastic packages in the United States.

Norton Laboratories, Inc. Lockport,

PACKAGING CATALOG







4 and 5. High-relief molding in cellulose acetate makes striking container for Cruver playing cards. Hinged lift fits into a recess in base and aids removal of cards. Molded by Cruver Mfg. Co. 6. Acrylic plastics were selected for these cosmetic containers because of brilliance and crystal-clear quality of material. Name affords design. Molded by Thomas Mason & Co. Material by Röhm & Haas Co.



7. Eye shadow compact, made of polystyrene with moldedin design on both base and lid, has jewel-like quality. Material by Bakelite Corp. Molded by Plastics Molded Arts, Inc.

The acrylic resins, being available as transparents, are utilized for portions of displays, for sign letters, for transparent box tops and similar packaging applications.

Vinyl resins have been used for a number of closure applications and for dispensers where the product being handled might affect other plastics and where the toughness of the material suits it to withstand hard usage. The vinyl materials are odorless, tasteless, non-toxic, non-warping, and have water and chemical resistance.

Polystyrenes have been widely adopted for closure use in the packaging of mineral acids because the material is highly resistant to high acid concentrations. Change of closure color facilitates identification and association of closure and jar and thus prevents contamination of acids by the transposition of closures from one container to another. Polystyrenes have good resistance to alkalies as well and are not affected by alcohol or water. For this reason, and because they do not give off offensive odors or taste, they are being widely used for molded liquor dispensers and pouring devices, particularly the types designed for bar use.

Thermoplastics are particularly suited to injection molding, a process, in turn, particularly suited to the fabrication of small articles, such as package parts and to long run volume production. While thermoplastic materials are more expensive generally than thermosetting materials, numerous opportunities for their use have arisen where the added expense is compensated for by the lighter weight of the finished part.

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Cast plastic compounds

HE cast plastic resins are materials which are supplied by the manufacturer to fabricators pre-cast into definite shapes. They are available in sheets, rods, tubes and in a wide range of standard shapes. Their fabrication is by machining and assembling rather than by molding. They have an advantage in package fabrication where a limited number of units is required because mold costs are entirely eliminated. They afford colors practically without limit and all degrees of transparency or opacity are available in these cast materials.

They are formed in inexpensive lead molds, the principal cost being for a mandrel which must be shaped from steel to the exact dimensions and shape of the interior of the mold. Mandrels so formed are dipped in hot lead which adheres to the metal and may be driven or "shocked" off when cold. This operation takes but a few minutes and as many molds may be made from each mandrel as required. Once made, the molds are filled with the liquid resin and placed in ovens where the temperature is carefully and automatically controlled over a period of days while the material cures, or polymerizes to its hardened state. The cast shape reproduces the exact finish of the mold and little finishing other than

smoothing the "pouring" edge is needed. Polishing is seldom required. Thus, cast resins have many advantages which the packager will find applicable for his purpose.

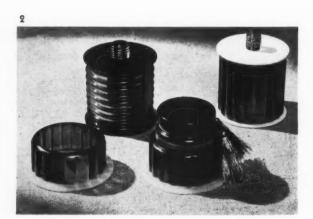
A more recent development involves the use of rubber molds in which case complicated shapes, such as small statuettes, can be cast. The stretchable rubber mold is stripped from the mold after the latter hardens.

A number of stock cast resins are available in the shape of boxes, box bases, tops, etc. Many manufacturers of cardboard boxes have found it practical to use small bars and knobs cut from rods of cast resin as decorative handles. The wide range of colors of the cast materials give a brilliant contrast with paper, fabric and leather box coverings. They have also been used as knobs and handles in conjunction with transparent boxes and displays made of rigid transparent sheet materials.

In the display field, they find application as display decorations and, when cut by jigsaw, as letters in signs and for similar purposes. They are also used to form the bases and supports for luminous display letters. The limit of their application is only that of the wood-working tools by which they are fabricated. Display plaques with designs in relief have effect of woodcarving.



1. Boxes of a cast plastic resin have the appearance of being carved from marble. All boxes have hinged tops. The hood-like lids of the boxes in the upper right of the photograph work in tumbler fashion on metal pins. 2. Gift containers for foods in brightly colored, transparent and opaque plastics. Varied combinations of color and transparency possible in cast plastic resins make particularly interesting containers for gifts. Containers, such as these, may be used not only for foods, but also may be adapted to cosmetics and other products. Material by Catalin Corp.



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GONE FOR

First call on the extensive facilities of Mack Molding Company goes to the U. S. Army, Navy and Air Corps. Production of Mack moldings has been "stepped up" to meet their every requirement. Vital components-turned out faster and with greater precision are being integrated into implements of Victory.

True, the unessentials of today are missing -but not permanently. For, when peace

comes, the gains—as measured in terms of advancements-will be a hundredfold. New methods, improvements, efficiencies - all will be the reward for this voluntary fasting on luxuries . . . the comforts that are temporarily "gone for the day!" Mack Molding Company, Inc., 140 Main Street, Wayne, New Jersey.



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PACKAGING CATALOG

XUM

Stock mold plastic containers

HERE are probably many manufacturers who would like to package their products in plastic boxes if they knew such boxes could be obtained within the limits of their appropriation for containers. It has probably never occurred to some of them that many such boxes are available if they were only able to dig out the source of supply. It is to these manufacturers that this article will be of special interest.

Original mold costs have been frequent barriers to manufacturers whose requirements for a few hundred boxes of exceptional quality to package a certain item would not permit the additional investment and still leave anything like profit. Molded boxes from stock designs are the natural answer to these requirements and there are many molding establishments with a number of such molds in their archives waiting to be used.

It is keen buying judgment to take advantage of these stock designs and there is no reason to believe that because a box has at one time been used to package a product that it is not equally useful in packaging another product. Even though a stock design is chosen to avoid mold costs, there is nothing to prevent the molding from being given its own individuality and made suitable for the exact purpose in mind. It must be remembered that the molds are really the stock items. The containers to be made from these molds are not in any sense ready-made. They can be as different from the original boxes for which the molds were made as the imagination of the manufacturer will allow.

In the first place, plastics permit a wide range of colors and color combinations which are in no way limited by stock molds. If an original box and cover were produced in red or black, there are literally hundreds of color combinations that can be used to make the new boxes appear as different as though actually designed for the current user. It is also possible to make boxes of one color and covers of another. Or the cover can be made of plastics and the box itself of another material. Then, too, there are inlays, either of metal or another color of plastic material, which offer innumerable ways of changing the appearance of a box from that of its predecessor produced from the identical mold.

If a comparatively long run is contemplated, tradenames and trade-marks may be hobbed into the mold to be used for the cover, producing an entirely individual box with identifying name of the product or manufacturer. Inlays, especially, offer an attractive means for product identification and they may be accomplished either by inserting stamped metal inlays in the mold when molding or by hobbing the marks of identification in the original mold and then plating with metal by electroplating methods. These recessed identification marks may also be wiped-in with contrasting color if the expense of inlays would be avoided.

A method has been worked out through which it is possible to print in as many as four colors on plastic containers with little expense. An overall pattern against a plain ground will change a stock container from a drab to a gay affair and give it individuality in keeping with the product it contains. Trade-marks, advertising matter or plain designs can be imprinted in this way.

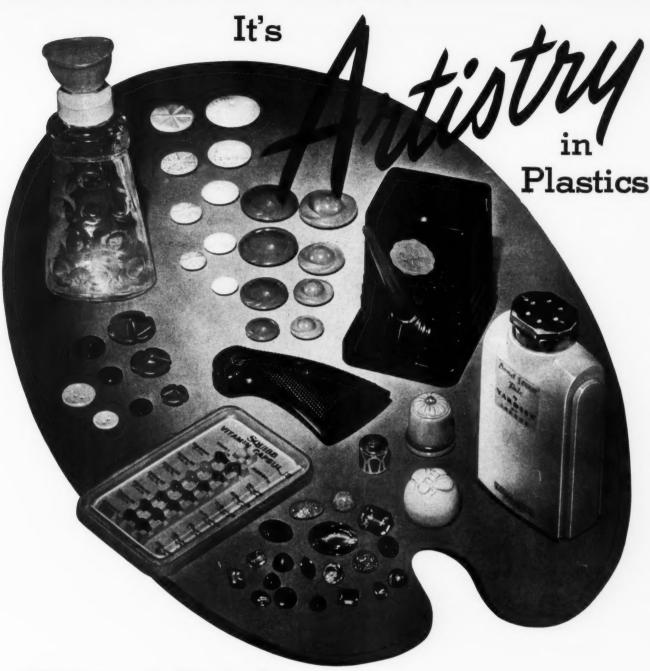
The re-use value of plastic containers must not be over-

1. Two-piece and hinged round boxes for cosmetics. These were molded of urea and phenolic plastics. Though all of them were derived from stock molds, varied color schemes and applications of brand identification individualize the different containers. Molded by Norton Laboratories, Inc. 2. Powder boxes and flat compacts. Molded by Van Norman Molding Co.





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if its produced by



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looked or underestimated. Their smooth lustrous surface and the permanent nature of their construction preclude any chance of their being discarded as soon as the product which came in them is removed. Women, and men, too, find many permanent uses for an attractive box and almost all of these plastic boxes, available from stock molds, have been carefully designed with this thought in mind. It is one of the greatest recommendations for the use of plastics in container construction. This one advantage is frequently responsible for the choice of the item at the point of sale. There are amazingly few instances where the extra cost of a plastic box has not justified the additional expense when total volume of sales has been tabulated.

Some molders have spent considerable time and money in perfecting cream jars, powder boxes, rouge boxes, lipstick containers and allied items for the cosmetic trade. Others have developed clever moldings that serve in the re-use capacity of cigarette boxes or ash trays, and the like, cleverly designed and thoroughly useful both for packaging appropriate items of merchandise and in after-use. Then there are other molded items which were originally planned for the retail trade and which, through their familiar appearance in retail stores at a rather substantial price, add obvious value to the mer-

3. Hinged lid phenolic box with design in relief on top. 4. Bell-shape wedding ring container with delicate designs in high and low relief. Material by Bakelite Corp.





chandise they contain when they appear as a package.

Another advantage to the manufacturer who is in a position to choose a design from a stock mold is prompt delivery. To make a mold of steel, grinding and tooling it into shape and hobbing in special designs, takes time. Weeks, and often months, are required to finish a mold of this sort. But the manufacturer who finds a mold that is satisfactory for this purpose among stock molds has only to wait for a chance to get the mold on to a press and production begins at once. Not only that, but he has the opportunity of seeing exactly what kind of box or container will be delivered when production begins. Samples are almost always available and the manufacturer can look them over, choose one that meets his requirements of size and price and, if he chooses to do so, can order a hundred or so for test purposes in obtaining sales reaction before he orders the quantity he will eventually need. Of course, in small quantities of one hundred, these boxes will cost more than in larger quantities but, even so, the expense is often justified by the satisfaction of knowing in advance just what results can be obtained. Sample boxes or containers from a specially designed mold are often very expensive because a single cavity mold must be made and finished and this cost must be absorbed by the manufacturer before any boxes are produced. Changes and corrections are likewise expensive. But when containers are made from stock molds that have already been proved, these annoyances and additional expense are entirely avoided.

Since molds of steel are good for exceedingly long runs of production without appreciable fatigue or wear, there are many of them throughout the country that have served their original purpose and are stored away in molders' shops. Because one of them might have been designed to produce boxes in which safety razors were sold is no reason why it is not equally suitable to hold another product now that the razor is no longer merchandised in that kind of box. Many of these boxes can be fitted with interior compartments at small additional cost and become entirely individual to the merchandise they now contain. Especially is this true if color combinations are changed.

Light and dark colors can be molded from the same mold. Even the cover and bottom of a box may be molded in different colors with the same operation, although this requires some ingenuity on the part of the molder and is not usually done. Lighter colors add somewhat to the cost of the box-black, dark brown, green, red and mottled being among the less expensive colors of molding materials. Another thing to be remembered in ordering plastic moldings from stock designs is that this places no handicap upon the buyer in choice of materials. These boxes are not ready-made. They are in no sense old stock. When a manufacturer orders boxes or other items from stock molds, he has the privilege of specifying the exact materials he wants used in molding his boxes. This is particularly important in ordering boxes to be used for creams, powders and other cosmetics, and the advice of your molder in the choice of materials should be taken seriously.

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• The flexibility of REILLY INDUR PLASTICS permits their use in a wide variety of products, such as containers, closures, electrical parts, desk sets, cabinets, etc. Whether the primary consideration is beauty, strength, or economy of production, INDUR PLASTICS will meet the requirements of the job... Articles molded from INDUR compounds combine beauty of color and finish, strength that insures maximum service and protection while permitting lightness of weight in design, and economy in molding. INDUR molding compounds are manufactured in several degrees of plasticity, and are available in rich blacks, beautiful mottled effects and striking color combinations.

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500 FIFTH AVENUE, NEW YORK

2513 S. DAMEN AVENUE, CHICAGO

MINNEAPOLIS, MINN.

Molding methods

HERE are two methods in general use for molding plastics, known, respectively, as the compression molding method and the injection molding method. The former is the older of the two methods and has been in use since the early days of the development of plastics. The latter is a method developed within the last few years and designed for use with thermoplastics.

Compression molding

In compression molding, molds generally consist of two parts, one attached to the bed of the hydraulic press and the other attached to the hydraulic ram. The plastic material, in powder or pellet form, is inserted into the cavity of the female mold and the other portion of the mold is then depressed by hydraulic pressure. Heat is applied simultaneously, causing the plastic material to flow in the mold assuming the desired shape.

For the general run of phenolic and urea type molding materials, pressures of from 2500 to 4000 lbs. per sq. in. are required. Heat is usually applied by means of steam run through pores in the mold.

On simpler, smaller, molds, hand type molds are utilized. These are assembled and loaded into the hydraulic press by hand. They are heated and cooled by conduction from the platens of the molding press. These latter are steam heated and then water cooled after the mold is closed under pressure. Semi-automatic molds are used for more complicated jobs or larger jobs and are attached to the head and ram of the press. This type is cored or ported for steam heating and water cooling. While semi-automatic molds are more expensive than hand molds, they operate on a shorter cycle and hence are generally more economical for large-scale production.

Both types of molds are usually made with multiple cavities to mold a number of articles simultaneously. The exact number depends, of course, upon the size of the article to be molded and the capacity of the press in which they are to be used. Usually the cavities duplicate each other and mold identical pieces, although this is not always necessarily the case. Ingenious devices are utilized to secure the ejection of the molded object after molding is complete.

Preforming

While plastics can be fed into the mold in powder form, it is generally found more convenient, speedier and more accurate to compress the powder into tablets or preforms which are then inserted, by the press operator, into

the mold cavities. This is accomplished by special machines which are of two general types, the single stroke machine and the rotary. Both work on essentially the same principle in that the molding powder is placed in a hopper and a predetermined quantity or weight is automatically fed to the die or dies. Sufficient pressure is applied to the charge of molding powder in the die to compress these many granular particles into a tablet.

Rotary machines are more generally used for the simpler preforms. Their capacity ranges from 250 to 400 pieces per minute. Single stroke machines are used for larger or more intricate types of preforms and have a capacity of 50 to 150 preforms per minute. These machines are adjustable so that various weight preforms of the same general shape can be made on the same dies. They are also adjustable for hardness of preform.

Automatic molding

Most compression molding presses require the attendance of a skilled operator who places the powder or pellets into the mold cavities, controls the opening and closing of the press and the timing of the cycle. However, a number of automatic machines have been developed for the molding of small units on a continuous production basis. These machines are hopper fed and operate the single or multiple cavity molds, performing all the operations from loading to ejecting, under completely automatic timing cycles.

Since an automatic machine can work continuously, it is possible to get large production by running around the clock and this, in turn, permits the use of smaller molds with fewer cavities. This saving, plus the labor saving, makes the machines particularly desirable in certain cases where continuous requirements for materials are to be anticipated.

For closure molding, a rotary type of automatic press is utilized in which a series of molds move in rotary fashion, being filled at the start of the revolution and going completely through the curing cycle to the ejecting stage of the finished product as the mold wheel rotates.

Mold making

Molds are made from special tool steels and represent one of the highest forms of the tool-maker's art. After the mold has been cut in the steel, it is usually heat hardened. To attain an extremely high finish and to minimize wear on the mold, chromium plating is frequently used.

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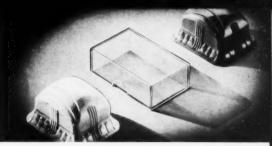
for injection and compression molding and many 100% Automatics of our own design. Our other new plant in Fairfield, Conn., will be ready for production early this year.

we have skilled SERVICE

for styling, engineering, mold and model making—
and most important of all—a "know how" in molding
that produces a better precision product at a lower cost.

we have topnotch CUSTOMERS

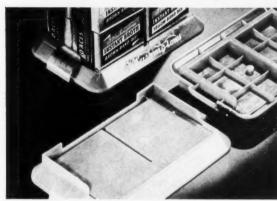
a proof of quality molding. Our designers and engineers are available without obligation. Let us study your packaging problems now.



Injection molded boxes show what can be done with color and warmth of plastics to add sales appeal.



Dark plastic clips lend richness and rigidity to a printed mirror sign for a famous brand of liquors.



Bright yellow injection molded base gives full display to products and plenty of built-in support, as well. Glass sides allow visible stacking.



(above) The transparency of plastics allows a permanent design to be molded on reverse side. (below) Display-package for Cutex manicure accessories helps build sales.



BRIDGEPORT MOULDED PRODUCTS, INC.

BRIDGEPORT



CONNECTICUT

Chromium is one of the bardest known metals and, when applied by electro-deposition, provides a surface which is highly resistant to wear, abrasion and corrosion.

When multiple cavity molds are to be utilized in order to secure volume production, lower cost or higher speed of production, special economies can frequently be effected, since the cost of duplicating molds is substantially less than the cost of making the original one.

A process known as hobbing is frequently utilized. This consists of forcing a hard piece of steel of a desired shape into a softer piece of mold steel under tremendous pressure and thus causing the mold steel piece to acquire a cavity exactly complementary to the shape of the hard hob. The soft steel piece is then further finished and heat treated to attain the hardness required for use in plastic molding.

Duplicating machines, both manual and automatic, are utilized in making multi-cavity molds. These machines are essentially high-speed vertical millers so equipped that they may be guided over a template and exactly duplicated in this template in the mold steel. It may be seen that each repetition of this process will result in the preparation of an additional duplication of the mold.

A number of other methods of making molds have been developed, including the electro-deposition and the forming of molds by spraying metal.

Injection molding

Injection molding machines were first used in the United States as late as 1934. Since then, the art has expanded very rapidly and many hundreds of these machines are in use among molders today. Injection molding is used for thermoplastic materials—i.e., materials which can be softened by heat and hardened by cooling. With such materials, it becomes possible to heat the plastic in one section of the machine and then to inject it, under pressure, into the closed mold where it cools rapidly (almost instantaneously) and can be discharged as a virtually finished piece. Thus the cycle of molding can be substantially speeded up and the operation can be rendered completely automatic.

In injection molding, it is a general practice to mold a whole series of parts in a single operation and in a single multiple cavity mold. The parts come out as a unit somewhat resembling a branch or twig and are easily broken off from the stem or waste material which is then re-fused and re-used.

Machines used in injection molding are highly complex, being equipped with temperature, pressure and time cycle controls which are adjustable and which are automatically operated. Machines have a capacity of from 2 to 18 oz. per stroke. The machines operate at a speed of from 10 to 90 seconds per cycle, depending upon the size and wall thickness of the article and the molding properties of the material being molded.

Injection molding has many advantages over compression molding. Most important among these are high speed of production and reduced mold costs. The latter economy arises because smaller and lighter molds with

fewer cavities can be utilized to achieve the desired production in a set time. The injection molding method is especially adopted for the fabrication of small boxes and closures when volume production of a uniform high quality is paramount. Containers of large size and articles of heavy sections are often more economically molded by compression molding.

Designing plastic package parts

The design of plastic molded packages and package parts is necessarily a highly technical and specialized art. Hence, in planning any molded article, the molder should play an important, even dominating role. He can frequently save thousands of dollars for the purchaser by a single word of caution at an early stage in the planning.

On the other hand, failure to consult him may produce a workable but far more expensive or less satisfactory package. In perhaps no other field of packaging is this condition quite as true as in the plastic molding branch.

Finishing operations

When the article has been ejected from the mold, it is not necessarily complete. A number of supplementary operations may be necessary, dependent upon design. If the product is a box, hinges and locks of various types may be required. These may be attached by screws, rivets or self-tapping screws. A very widely used type of hinge consists of a spring which locks into recesses provided for this purpose in the base and cover of the molded article. The use of this type of hinge requires pre-planning, since the cover pivots upon a groove in the molded base. The spring's function is principally to hold the cover into this groove and to control opening and closing. Proper planning of the groove and hinge construction can predetermine the angle of greatest opening—an important factor where the molded box is to be utilized on display.

Applied decoration

A number of methods of decorating and identifying plastics—with trade-marks, lettering, etc.—have been developed. Roll leaf stamping is widely utilized. Metal inserts of various types are likewise frequently utilized as decoration. Color wipe-ins with recessed lettering or bas relief work require hand operations, but are not inherently expensive and are very frequently used on both packages and molded displays.

The use of such applied decoration has contributed not only to the versatility of plastics as a medium for packaging but also for achieving sales appeal, utility and beauty. It likewise provides, on occasion, a means of reducing package costs, because such applied decorations are usually less expensive on short runs than decorations formed by the mold itself, since these require expensive mold finishing operations. On longer runs, the cost factor is, of course, not so great and the choice as between applied or integral decoration is more a matter of design rather than one of expense.

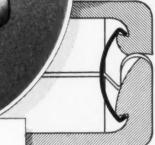


Millio PLASTICS

RATHBUN (basic)
SPRING-HINGE

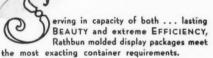
PATHBUN SPRING-HINGE CONSTRUCTION

> SOLESIONED SOLESIONED SOLESIONED



CLOSED POSITION

OPENED POSITION



ROLLER BEARING TYPE

① Here... is MOLDED PLASTIC in all its glory of true craftsmanship, design and color; the ideal answer to smart exterior dress appeal for distinctive products.

② ... PLASTIC PACKAGING embodying instantly recognized possibilities where precision-formed plastics prove their superiority with the employment of Rathbun's famous two position, spring actuated hinge.

As illustrated above, this unique feature with its two special adaptations, is an integral part of all Rathbun hinged container construction and provides positive spring-opening and closing action with sheer simplicity, size-minimum and trouble-free economy.

Samples of Rathbun spring-hinging plastics will be sent upon request and all cooperation given your every packaging problem by our Research and Engineering Departments. Write today.

RATHBUN MOLDING CORP PAT 1833305 SPRING-HINGE

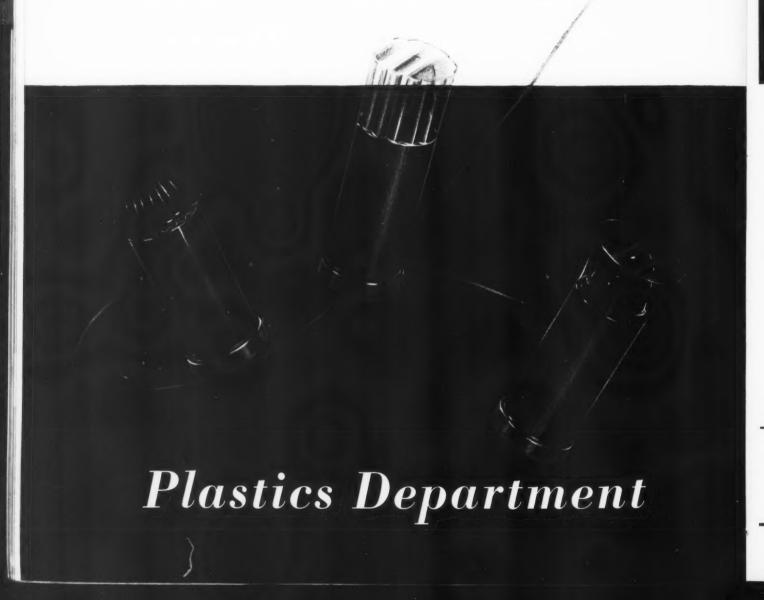
> Rathbun MOLDING CORPORATION

The Design ...

It is interesting and significant that during the past year General Electric has been making packages from six entirely different kinds of plastics.

For one thing, it reveals the scope of properties plastics offer and the wide selection from which you can choose the type that best suits your needs. For another, it reveals General Electric's complete molding facilities with which to produce your package in plastics by any method or from any material you care to select.

There's another point about plastics for packages. That's the freedom you have in design. For plastics, by their very nature, are materials that flow and design limitations for packages are set only by a craftsman's ability to sculpture a mold.





And The Designer

The beauty of plastics is inherent in the material but the value in a plastics package lies in the designer's ability to create a striking item that can be produced economically.

To obtain these results, General Electric has a group of functional designers and stylists who comprise a unit in the molding plant. They are designers who know the characteristics of plastics materials and how they react in the mold. They know the problems encountered in molding. Moreover, by their constant contact with packaging producers, they know merchandise that sells.

To many discriminating packaging buyers, their service is indispensable.

GENERAL 28



ELECTRIC

PD-11

MODERN PLASTICS

is the only magazine of plastics

As the only magazine completely devoted to reporting, chron-As the only magazine completely devoted to reporting, climatic icling and surveying all the news, changes and advances in plastics, Modern Plastics contains articles on new materials, new processes, new applications of all plastics every month. It also processes, new applications of all plastics every month, it also keeps readers up to date on current Government regulations.

SOME OTHER MONTHLY FEATURES: Technical Section: technical developments, tests, engineering developments. Includes Plastics Digest, the monthly review of technical articles in professional and technical publications; U. S. and Foreign Plastics Patents, briefed and outlined.

Stock Molds: reproductions of moldings and castings made

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used in molding, fabricating, laminating, extruding, mold-\$5.00 - 1 year - 12 monthly issues

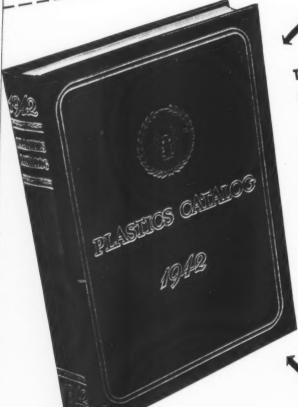
Subscriptions: \\ \$5.00 - 1 year - 12 monthly issues \\ \$8.00 - 2 years - 24 monthly issues making, etc.

Canadian: \$5.50 and \$9.00 • Foreign: \$6.00 and \$10.00

MODERN PLASTICS magazine

122 East 42nd Street New York City





THE 1942 PLASTICS CATALOG IS THE ONLY COMPLETE AND UP-TO-DATE SOURCEBOOK AND HAND-BOOK OF PLASTICS INFORMATION

Nearly 650 pages of reliable, authentic plastics information are Nearly 650 pages of reliable, authentic plastics information are packed between the sturdy covers of the 1942 Plastics Catalog. The largest ever published, this Catalog contains many

PLASTICS IN DEFENSE - A special section devoted to the role plastics are playing in defending America—illustrated with phoinnovations:

graphs of actual applications.

Up-to-the-minute articles on every plastic material, including up-to-the-minute articles on every plastic material, including new treatments of Phenolic-Asbestos compositions, polyterpene tographs of actual applications.

new treatments of Prienolic-Aspestos compositions, polyterpene hydrocarbon resins and shellacs. This section includes the famous Plastics Properties Chart—a self-contained list of every property

7 more complete sections including Plastics Engineering, Pro--physical, chemical, electrical-of all plastics. duction Operations, Machinery and Equipment, Laminates and auction Operations, macrinery and Equipment, continuous and Vulcanized Fibres, plastic Coatings, and Synthetic Fibers and Princetons to the Publication and the Complete Index and Directors to the Vulcanized Fibres, Plastic Coatings, and Synthetic Fibers and Rubbers and the only complete Index and Directory to the Plastics industry—3 times larger than last year's.

The book is lavishly illustrated with both full-color and black-and-white photographs. There are only a few copies left—and and white photographs.

and-white photographs. There are only a few copies left—and no more available until the next edition in 1943.

PLASTICS CATALOGUE CORPORATION New York City



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Display circulation measurement

by Lincoln Jones

HERE can be no doubt of the advertising mediumship of the point of purchase. An advertising medium does one thing. It exposes a promotional effort to buying power—a group of consumers who can be moved to buy and use the product advertised by the effort exposed. Circulation or the measurement of the size of the group is the logical basis for fixing media rates and justifying advertising costs. Costs are further justified on the basis of recognizable factors of quality of the group: economic, geographic, racial, cultural and age level.

A piece of advertising material displayed in a retail store is certainly exposed to the group of consumers passing and entering that store. When the material promotes a widely distributed brand of merchandise and is exposed in a number of stores, the size of the group of consumers is equal to the sum of the consumers passing and entering all the stores. This is circulation.

Furthermore, point-of-purchase circulation is measurable; it has been measured and related to the cost of using the medium in dollars and cents per thousand. Carl Percy in 1928 and the A.N.A. Window Display

Research later demonstrated that the cost per thousand circulation is far lower for the point-of-purchase medium than for any other form of advertising. This in no way disqualifies any other kind of advertising. It is due entirely to inherent advantages of the point-of-purchase medium not shared by the other forms.

Point-of-purchase circulation measurement is further enhanced by its buying power quality. The first demonstration of quality is the fact that \$42,000,000,000 passed across the counters of retail stores throughout the United States in 1939. Obviously everybody patronizes retail stores regularly—all economic groups, in all geographic areas, of all races, cultures and ages. Therefore, point of purchase does demonstrate its mediumship by exposing promotional efforts to buying power, by measuring its exposure in terms of circulation, by qualifying its circulation and relating it to the lowest cost obtainable.

We might stop here if all that were necessary was for an advertiser to proceed to send his advertising material out to every retailer in the country. If every advertiser did this, there would be no room in the stores for merchandise. But it is possible to select desirable points which represent complete coverage of the market or any desired part of the market effectively without "plastering the town." Such selection results in the maximum exposure to all of the buying power, at minimum costs and with the least possible waste of advertising effort.

Selectivity is probably the outstanding feature of point-of-purchase advertising. Whereas other media supply the actual selection of markets by means of editorial treatment, entertainment appeal or location with respect to neighborhood living standards, the advertiser must make his own selection of the points at which he wishes to display his advertising in retail stores. This requires effort and the effort can be justified only by the greater circulation per dollar of cost that can be bought in this medium.

The basis of point-of-purchase selectivity is a simple fact that may be observed every day of the week; the point-of-purchase market is concentrated in shopping centers. More than 80 per cent of the sales at the point of purchase are made in stores located in shopping districts which represent less than 40 per cent of the resident population. The A.N.A. Window Display Research plotted enormous concentrations of point-of-purchase circulation in shopping districts within towns and cities by means of traffic counts conducted in 19 laboratory cities. These shopping centers represent exposure to the entire consumer market of the United States. The concentration of

The retail store is the logical place for the final sales appeal, presented pictorially. One of a series of easel cards. Photo U. S. Printing & Lithograph Co.



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consumers in shopping centers is borne out irrefutably by the detailed reports of the United States Census of Retail Distribution.

This fact and available market data greatly simplify the advertiser's job of selection of outlets for maximum weight of coverage to any desired degree of intensity at the lowest cost. It has the further advantage of automatically coordinating his use of the point-of-purchase medium for advertising purposes as well as maintaining merchandise stocks with the coverage of other forms of advertising he uses. Finally, it makes possible the planning and execution of regular schedules at the point of purchase, comparable to other media.

Few advertisers who schedule their use of the pointof-purchase medium find reason to complain of waste of their material by refusal of retailers to use it. The frequent question of waste arises almost invariably from lack of this kind of planning. Indiscriminate distribution of mats, plates and program material would be just as wasteful.

Continuous point-of-purchase programs are also feasible as well as forceful. It need only be remembered that the street window is only one part of the point-of-purchase medium. Inside each store is space on counters, fixtures, the floor and even overhead—all exposed to buying power—which is available to advertisers.

By planning to use a different part of the store each month, a regular point-of-purchase schedule can be maintained the year around.

Finally, the point of purchase is the point on which all consumer advertising in any medium is focused. It is, therefore, the logical place in which to deliver the final selling effort, particularly since the customer is in the act of buying and the merchandise is there to be sold. This is especially true in competitive lines. You can't win a case a mile from the courtroom when your opponent is talking face to face to the jury.

While it is the oldest form of advertising in existence, point of purchase has suffered perhaps because, compared with more recent forms of advertising, it has been slow in evolving a modern literature of its own and modern techniques for selling itself. This is less true of the creation and production of material in which the producers have become highly specialized in the preparation of effective selling ideas during the past several years. More recently the creation of the Point-of-Purchase Advertising Institute, Inc., for the purpose of research, study and dissemination of the findings about this powerful advertising instrument, promises advertisers valuable help toward its ever more profitable application to their own business. Objective methods of measurement will reveal values hitherto unrealized,

An almost life-size window cutout helps the liquor retailer build up a specialty week for Schenley products. It is lithographed in full color and a realistic appearance is obtained by showing the simulated wooden box and the bottles on two different planes. The smaller card with easel back for counter use repeats the design of the window piece. Balloons have copy which ties in product and retailer sales promotion. This cartoon device gives animation to unit. Display by The U. S. Printing and Lithograph Co.

For use in jewelry and stationery stores during the Christmas season is this display for Sheaffer's pens and pencils. Particularly timely is the use of the large reproduction of Leutze's well-known painting of Washington Crossing the Delaware—Christmas 1776. The patriotic theme is emphasized by a card showing a soldier holding a pen and pencil set. Another card pictures a pretty girl admiring a Christmas gift set which she has in her hand. Designed and manufactured by Badger Merchandising Displays, Inc.





PACKAGING CATALOG

Specific functions of displays

by Gordon Cole

HERE is no greater opportunity in the whole field of advertising for an individual or a company to display sounder judgment than in the planning of store display material. Certainly few advertising men will deny that more money is wasted each year in this phase of their work than in any other. Whether the waste is due to the fact that a display fails to function effectively or to the fact that it is never used, the net result is the same—a financial loss to the advertiser.

It is consequently logical to assume that if a manufacturer wishes to increase the efficiency of his advertising dollar, he may well begin with a study of his display operations. And as it has been our experience that our displays did not produce satisfactory results until we planned them along functional lines, we believe the first thing the manufacturer should do is to determine what the specific functions of his store displays should be.

By the phrase, "specific functions of store displays," we mean the manner in which displays must work in order to produce results in different store selling situations. We do not mean the result they should produce, which is the same under all conditions and at all times, and that is the sale of merchandise. We stress this point because we believe that the only reason why a retailer should give valuable space to a manufacturer's display material is in the expectation that he will increase his sales by so doing. It is the only reason

why a retailer should advertise a manufacturer's brand.

What, then, are the important store selling situations where display material featuring a manufacturer's brand or product can function effectively? Can they be defined and classified? Possibly not, if widely different types of distributors are involved. Unquestionably yes, if distributors of only one type are considered. And as a "shoemaker should give no opinion beyond shoes," we shall speak about the kind of distributor we do business with—the department store and dry goods retailer.

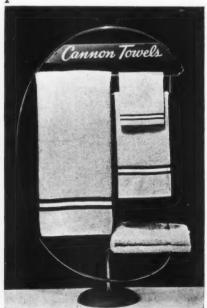
So far as this type of distributor is concerned, the more important store selling situations offering display opportunities are: 1) Windows; 2) Counters; 3) Ledges; 4) Walls; 5) Aisles; 6) Tables; 7) Floor space. Let us quickly analyze each of these situations and see how a typical manufacturer deals with them.

1. Windows: in the department store field, window displays present the most difficult problem that the manufacturer of a nationally advertised brand has to contend with. Store windows are in great demand and hard to get. Reserved principally for seasonable merchandise or merchandise with fashion significance, they are spoken for and allotted many weeks in advance of their installation. Many stores use no manufacturer's material because all windows are especially designed by the display manager of the store.

The amount of space allotted to a manufacturers'

1. A type of step-up fixture designed for volume selling of towels in matched sets. 2. An identification sign that takes up little space and harmonizes with any decorative scheme.





PACKAGING CATALOG









3. An effective counter display featuring hosiery which permits women to examine the fabric and test it for sheerness and weight. 4. A ledge unit, reproducing a section of a bathroom and having an actual bar where towels may be hung. 5. A shelf and counter arrangement with a clever poster. The sail is of toweling.

product is usually in direct ratio to the importance of his product and his sales to a specific store. Beyond the space that a product will get on its own merits, the most effective inducement a manufacturer can offer is a selling idea which is so tempting that the store will incorporate it in their windows. A number of manufacturers have secured many window displays by employing a specialized organization to design and build traveling displays that are generally pretentious in character and are invariably built around a sound selling idea.

Cannon secures many windows because of the importance of their products to many stores. In the past they have spent large sums of money in preparing window display material. Today their efforts are confined almost entirely to creating interior displays. These are used over longer periods of time and in their particular case produce more tangible results.

It is only fair to state that these conclusions do not apply to thousands of smaller dry goods stores and certainly not to other types of retailer outlets such as drug, grocery, cigar stores, etc., throughout the country.

2. Counters: counters in department and dry goods stores are generally reserved for merchandise—not for display material. As they separate the sales clerk from the customer, they must not hide one from the other. They, consequently, offer most manufacturers an extremely limited opportunity for their display material. Please note that we do not say, for the display of their products. If a display piece can be designed that will hold a product, that will show it off to advantage, that will feature the brand name and that will speed up rather than retard sales, it will be used and will function.

The Cannon hosiery stand is a typical example of an effective counter display. Women like to examine the stockings they buy. They want to feel the fabric, see the color and test the stockings for sheerness and weight. Several of these stands, each featuring a different weight of stocking in a complete color range, make it easy for the customer to select the particular stocking she wants.

These stands are in a measure self-selling displays. They carry the Cannon name, yet they are designed primarily to sell merchandise.

The Cannon towel identification sign is another example of a display piece that is appropriate for counter use. It takes up little space and is designed to harmonize with any department's or dry goods store's decorative scheme. Identification signs are worth their weight in gold if they feature the name of a product that is widely and consistently advertised to the consumer. Without being conscious of the fact, many women will buy the advertised product simply because they see the sign when they are at a counter. They have confidence in the product because they have seen it advertised and they buy it without hesitation.

It is Cannon's conviction that most women will not read long selling messages when they are shopping. Cannon spends hundreds of thousands of dollars each year in consumer magazines to sell women when they are in their homes. It is Cannon display material in the stores that reminds women of this advertising and that enables them to cash in on this large investment.

3. Ledges: most department and dry goods stores have ledges and ledges are made to order for display pieces. About the only limitation in design is that the display piece be big enough to be seen and the lettering large enough to be read at a distance. Two successful Cannon displays designed especially for ledges are a large electric sign that features only the name of the product—"Cannon Towels"—and a large cardboard display piece reproducing a section of a bathroom and providing a slot towel bar where actual towels may be hung.

These two display pieces have one very important attribute. They are extremely long lived. The cardboard display is so constructed that a retailer can change the towels in the slot bar as frequently as he desires. New merchandise selected from stock of a different pattern and color gives the display a completely new appearance. While the display is shipped flat in a carton, it is so de-

signed that, when set up, it gives a three-dimensional effect. An important feature is a platform at the bottom where bath mat, wash cloths or other bathroom accessories can be placed.

A chart on the back of each display suggests the correct colored towels to feature against the color background. For busy display men and hurried salespeople these charts are invaluable.

4. Walls: walls offer an extremely limited opportunity for displays. However, there are occasions when they can be used. As conditions vary widely in different stores, the display generally has to be tailor-made. It seldom pays to design displays and produce them in quantity for this purpose. Lighted shadow boxes featuring actual merchandise, posters and colored blowups of consumer advertisements are examples of appropriate displays for this purpose.

5. Aisles: aisles are generally reserved for traffic. However, there are occasions, usually when a store is holding a special sale, when tables or booths can be placed in them. Cannon towels and sheets, packed in attractive gift boxes for Christmas selling, have been widely displayed in this manner. Each year Cannon designs a Christmas booth which stores can easily build in their own workshops. Detailed construction plans are furnished the store, together with the necessary amount of printed paper and other trimmings required to complete the booth. Hundreds of stores throughout the country have constructed these booths at their own

6. With towels, dish cloths, pot holders, etc., invitingly shown, customers are reminded of needs and find it easy to buy extra goods. If clerks are busy, customers quickly serve themselves. Most effective placement is at elevators or near store entrance.



expense. Many stores have constructed a number of them not only for their towel department, but for the main floor aisles and other places where store traffic is bound to be heavy.

6. Tables: tables are the traditional selling equipment in towel and sheet departments. They are generally piled high with merchandise. Cannon struggled for years to find some display that stores would use on towel and sheet tables. Finally, a chromium rack was designed in the shape of a large letter C, with the words "Cannon Towels" across the top. It was so constructed that a complete matched set of bath towel, face towel, wash cloth and bath mat could be hung on it. This display piece has the same appearance from either front or rear. Consequently, when placed in the center of the towel table, it is effective regardless of the side from which a customer views it. This display has an adjustable base so that it can be regulated according to the height of the merchandise stacked on the table. It is an excellent example of solving a difficult display problem by designing a fixture to function under a most complicated store selling situation.

7. Floor space: when you are familiar with the manner in which stores gage the importance of various departments according to the dollar volume of sales per square foot, you will realize how valuable floor space is and how difficult it is to obtain. Cannon approached this problem on the only basis that it can be successfully approached. Due to the evolution of towels in recent years from utility to style merchandise, traditional store equipment has become obsolete. Consequently, Cannon designed an entirely new and up-to-date method of stacking, displaying and selling towels. It is a self-service mass display unit which has been planned especially for volume selling of towels in matched sets and which accomplishes the following objectives:

 Encourages Self Service: Brings customers close to merchandise, invites ready buying.
 Builds Sales of Towels in Matched Sets: Customer

2.) Builds Sales of Towels in Matched Sets: Customer sees matching pieces invitingly shown—buys more.

3.) Achieves Amazing Economy of Space: Elevated, orderly display practically doubles stock capacity of unit.
4.) Simplified Stock-keeping: No refolding of towels; unit is readily filled during the day; fast sellers show at a glance.

 Provides Space for the Cannon towel electric sign and the Cannon towel chromium rack, thus turning this selling fixture into a Cannon display.

Cannon believes that the most efficient display piece is that which makes the featured product an important part of the display. It believes that the efficiency of a display piece is increased if it is so designed that the product is shown much as it is used or seen in the customer's home. In all instances, the planning and designing of the display should begin with a thorough knowledge of the retailer, the characteristics of his store and the problem he faces in selling the advertised product. While many of the examples we have described are peculiar to our business, we believe they illustate certain basic display principles that many manufacturers can profitably apply to their display problem.

Preparation and planning of displays

by Michael Gross

HE reason lithographed displays are looked upon as the "Orphan Annie" among the various mediums of publicity is just because advertising men persist in passing the buck to the display salesman; who passes it on to his art department manager; who, in turn, passes it along to the first artist on his staff who has a leisure moment. That sequence always has, and always will, make for mediocrity—the greatest scourge from which window and store displays suffer. It just cannot be done that way-successfully. A certain amount of groundwork must first be cleared away and certain foundation stones properly laid. Disheartening though it may sound, it is up to you, Mr. Advertising Man, to see to it that this essential portion of the task is accomplished efficiently and effectively. And of all the ways to go about the job, wielding the pick and shovel yourself tops the list.

See a dozen or more of your representative dealers; merchants who have shown that they are alert for any plan to increase business. Talk to them frankly. Tell them you want to get up window and store material which will meet with their approval; which will reflect their viewpoint as to what a display to feature your product should be like.

But bear one thing in mind. Merely outlining your plan and then asking these men what they think of it will invariably result in a verbal barrage of: "Great stuff!" and "Sounds fine to me!" which leads exactly nowhere. It may flatter your vanity to ask what lawyers call leading questions and thus be sure of receiving only affirmative answers-but these leading questions too often result in altogether misleading information. The dealer is only human and would always rather agree with you than cross you. Not only is it much easier but it certainly involves far less mental effort to approve a plan than to think up objections to it. A good way to get definite information without tipping off what you, yourself, have in mind, is to ask the dealer to show you the displays your competitors are distributing and then urge him to tell you what he finds wrong with them. You may discover, early in your investigations, that a product such as yours does not turn over fast enough, nor does it yield a healthy enough mark-up, to warrant the dealer giving anything but counter space to a display featuring it; or that the material he receives from your competitors is altogether too large for the importance of the item; or, worst fault of all, that these displays feature the wrong selling point. Perhaps you'll find, to your utter astonishment, that what the housewife demands in your type of product is utility, whereas most of the displays the dealer has been getting featured a beauty appeal. Or probably just the reverse may be true.

You'll come back from even a two-day trip of this kind with more factually founded information about what the dealer wants in the way of display material than you could have gotten from a month of burning the midnight oil trying to figure it out for yourself. You'll have a new, and an accurate, conception of what size your new display should be; how it should be constructed; and what selling points it should feature to make the storekeeper like it well enough to put it in his window or on his counter. And he's either got to like it that much or he may just as well not like it at all. You can't win half a battle with a dealer.

Window and store displays must be aimed to the dealer—not through him. If he doesn't think the material you send him will help sell more goods, he'll junk it—nor will all your excited talk about the low order of dealer intelligence serve to cancel half a line of that inexorable fact. After all, it is the dealer's window and you are merely a guest, coming in only if you are given an invitation. One sure way of being invited is to stop thinking about your problems and your sales and begin to pay a little attention to the dealer's problems and his sales.

Always keep uppermost in your mind the fact that you need the dealer far more than he needs you, despite all you may have heard about building up such an overwhelming call for your product that you will force the dealer to carry it, whether he wants to or not.

The more time you spend finding out, from your dealers themselves, what they really want, and the less time you spend guessing what they want (or getting some display salesman to do the guessing for you), the more successful will your finished displays be and the more of your product will they sell.

But, important as it is to get this dealer viewpoint, the groundwork has not been fully laid when you have heard all he has to say. It is now necessary to do a little digging among your own salesmen. Either in person at a sales conference, or by individual letters while they are on the road, every man on your sales force should be told that a window display is being planned and that any helpful suggestion he can give you will not only be appreciated but immediately acted upon.

While it may be true that the average "knight of the grip" understands very little about the mechanism of consumer-response or the psychology of perception, you must admit that he does get around. He talks with dealers every day, intimately and frankly. He can tell you if the storekeepers in his territory will give window space to a display featuring the line or whether they will use

Reprinted in condensed form by permission of The Ronald Press Co. from "Dealer Display Advertising" by Michael Gross.



This series of medium sized cards makes an appetizing presentation of a line of meat products in a form welcomed by dealers. Photo U. S. Printing & Lithograph Co.

only counter cards. He has discovered, by asking the direct question, exactly where he will be allowed to put up a window streamer; arrange a floor pyramid; or tack a show card on a bare expanse of wall. And he won't be guessing when he tells you about it. He actually does know.

An advertising man will invariably come closer to producing a 100 per cent perfect piece of store advertising by listening to the advice of his dealers and salesmen than he will from the layouts he makes sitting in his office, or that the lithographer's representative brings around to him. Merely summarizing such information as he receives will, at least, give him a cue as to whether he wants a window cut-out or just a counter card; what the approximate size should be; whether the actual package should be featured or left off; and if the selling price is to be played up, subordinated, or eliminated altogether. The wrong guess on just a single one of these factors has doomed to failure many an edition of otherwise perfect displays. Don't make the mistake of thinking that the more designs you allow lithographers to submit, the greater will be the selection and the more apt will you be to find a perfect display idea.

Aside from the economic loss to the various lithographers (I have seen \$1,200 worth of sketches submitted on an order that couldn't possibly amount to over \$750) there was invariably an aftermath of squabbles and petty bickerings. As the same story had been told to each lithographer's salesman, and as not one of these men had anything in the way of an original thought to add to that

story, it was only natural that the submitted sketches would bear some resemblance to each other. And, because these designs did look alike, a flood of charges would immediately break forth when the winning display was placed on view. "That fellow lifted my idea bodily," one of the losers would cry; "You stole the construction from the sketch I submitted," would wail another; "That way of holding the package was originated by us," would yell a third—and the advertising man would begin to toy with the idea of taking a header off the nearest pier.

In point of fact, this condition became so bad that it forced buyers of display materials to turn to their advertising agencies, have them prepare display sketches, and then ask a few of the leading lithographers to figure on reproducing them. But this didn't work out so well, and doesn't to this very day, for a very good reason. Advertising agency training is in one direction only: the preparing of material to appear in newspapers and magazines. All of this copy is planned for what is known as a "short throw"-meaning that it must be definitely designed to be read about six inches from the eye. But a window display, to be successful, must be conceived for a "long throw"-it has to get over its selling message six feet from the eye-and the technique of preparing such material differs radically from periodical advertising. Another difficulty an agency man is up against is that all his experience is in mediums possessing only two dimensions: length and breadth, whereas a show window has a third one, depth.

Well, here is how the modern advertising man finds a solution. First, he makes his own selection from among the lithographers who call on him. Secondly, he makes a habit of scanning the imprints on the really outstanding displays he sees about town. And, thirdly, he consults the display sections of the advertising magazines. Having discovered who the display specialists are, he gets in touch with not more than four of them, puts his problem before their representatives and asks for a few visuals from each. All he wants, please note, are rough sketch ideas—and that is all that is necessary.

There is no finer spur to a creative artist than letting him know he is pitting his ability against that of some rival display expert. There is also no better whetstone for an estimater's pencil than the knowledge that a couple of other lithographers are figuring on the same set of specifications.

And now you are finally ready to talk to the representatives of the lithographers who are going to work with you. Give them such basic information as to whether you want a window display, counter card, hanger or floor display; what type of store handles your product; whether or not you sell through jobbers; and what your plans are for distribution. There remain such secondary important questions as: "Are you going to ship the display with the merchandise?" If so, the salesman will want to know the size of your shipping container, so that he doesn't bring around a sketch which will have to be folded sixteen times to fit into it. Is the display to be shipped by itself? Then the size must be kept within

parcel post limits, or you'll find yourself faced with a tremendous express bill.

Telling the salesman the few essential things he must know if he is to do a sensible job doesn't constitute, by any stretch of the imagination, furnishing him with an idea. You are merely fencing him in, so to speak, to keep him from wandering all over the lot. If you have consulted your dealers and salesmen, you are in the happy position of not having to ask the display salesman to guess. You tell him, instead.

Another thing the salesman will want to know is what quantity you were thinking of buying. To this question there is also a stock answer that is altogether meaningless. That comeback is: "You haven't landed the business yet and already you're worrying about how many displays I'm going to buy."

The size of the order is furthest from the mind of the salesman when he asks that question. Although it rarely occurs to the man on the buying side of the desk, quantity does make a difference in the type of sketch to be submitted. If you want only a thousand cut-outs, the salesman knows he must caution the art manager to stay away from elaborate constructions, complicated diecutting and designs that will take many colors to reproduce. The quantity is far too small to absorb the heavy initial cost of elaborate engravings and dies. On the other hand, if you have in mind to buy 10,000 threepiece, 28 in. by 44 in. screens, the art department can let itself go the limit, for now the run is large enough to absorb the cost of preparing the job for the press and finishing it after the sheets are lithographed. If you'll just remember the fact that an elaborate die costs just as much whether you use it to cut out one thousand displays or one hundred thousand, you'll get the idea.

Now comes the salesman's parting thrust—and it has started more arguments than anything else in his repertoire of interrogations. The fireworks usually start—although there is no real reason why they should—when he gently asks: "And what do you expect to spend per display?"

There is one reason, and one reason only, that prompts the salesman to ask that question. He wants to know what artist to use and what type of display to submit that will come within the price limit you set. A certain artist, who specializes in just the very subject you want to feature on your display, may charge as much for one of his roughs as you have in mind to pay for the whole edition of finished cut-outs. How is the salesman to know that the assignment cannot be given to this particular artist unless you tell him what you have in mind to spend?

The best way to dispose of the price situation, fairly and tactfully, is in some such manner: Say to the man:

"In getting up your sketch, bear in mind that we can't possibly pay over a dollar each for ten thousand displays inserted in corrugated containers and sealed ready to ship. Of course, the more you can cut under this price and, at the same time, give us a real merchandising idea, the better will be your chance of getting the order away from your competitors. But, under no circumstances, will we go over a dollar a set."

Now let's see how far we've come. You've told the salesman the type of display for which you are in the market, based on your own knowledge of the definite dealer requirements; you've told him the quantity you want and what you have in mind to spend per display; you've told him how the material is to be shipped; how soon you want the rough suggestions; and when the job will have to be delivered if he gets the order.

With this information, plus a few other questions he may ask, any display man worthy of the name will be glad to go the limit to give you sales-producing ideas.



Above: A merchandising idea that really sold electric bulbs. Photo Kindred, Mac Lean and Co. Inc. Below: Small pieces like these are sure to be used somewhere! They were designed with dealer cooperation in mind. Photo Stecher-Traung Lithograph Corp.



PACKAGING CATALOG

Coordinating displays with other advertising

by A. O. Buckingham

EMORY fades fast. In the first thirty minutes after an idea for a product has been registered, nearly half of it is forgotten. For this reason, unless an ad is powerful enough to urge immediate purchase, it is most necessary to supplement the intermediate time with coordinated window displays as well as reminder displays of related merchandise right up to the point of sale inside the store.

By proven tests during the past three years, Cluett, Peabody's research staff established the following five musts for successful selling and display by the retailer:

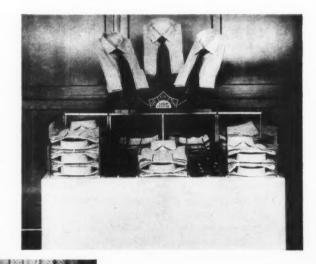
- 1. Display selected related items together.
- 2. Stock them together at the point of sale.
- 3. Style them for each other whenever possible.
- 4. Follow through in advertising and display.
- Be sure that store systems aid rather than handicap related item selling.

After the coordination of displays with related merchandise the second step is to hook up the displays with local and national advertising and *inform all store personnel of the promotion plan*.

The technique of planning national Arrow advertising with the thought of furthering its effectiveness by reproducing it in display form for windows and interiors has been successfully promoted by our company. The idea of showing the original ad and actual replica adaptations in display point out the value of coordination of national advertising and display.

Where national advertising does not lend itself to window reproductions, blow-ups of the ad are made and distributed as window backgrounds and interior counter displays. This has a similar effect of carrying the message of the original advertisement to the point of sale. With each Arrow display of this nature, instructions go to the buyer and display manager to coordinate it with the merchandise as it goes out on the counter.

Selling related styled shirts, ties and handkerchiefs that are designed to go together creates a merchandising problem of coordination not only for the manufacturer, but also for the dealer, because the coordination must be carried out at the point of sale. In other words, specific feature merchandise, when it reaches the store, should be collated and assembled on the counters and stock





Above. A counter having related merchandise assembled so that the customer is encouraged to purchase several items. The assembly also keeps the sales person from going wrong in presenting the merchandise. Left. Another window display tying in with national advertising and illustrating effectiveness of featuring related units.

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A HIGHLY SUCCESSFUL

DISPLAY

dimensional construction....ingenious of merchandise....IT SELLS KETCHUP! startlingly realistic in its threeand economical in its mass display Designed and produced for the H. J. Heinz Company of Pittsburgh ... one of the many famous na-

CREATIVE

tional accounts served by us.

KINDRED, MACLEAN & CO., INC.

43-01 TWENTY-SECOND STREET LONG ISLAND CITY - STIllwell 4-7212 CHICAGO OFFICE . 154 EAST ERIE STREET shelves so that the sales person can't go wrong in the presentation of the merchandise to the consumer.

At the risk of getting into the fixture business, our company has planned counter fixtures and display units to stock and display ensemble sets of Arrow shirts, ties and handkerchiefs, all of which blend in harmonizing or contrasting colors. Consumers are more easily attracted to the merchandise in this way than when items are featured singly. Arrow dealers are encouraged to display ties on top of the shirt counter regardless of whether they have a special tie department. These fixtures aid the dealers in selling many ties and handkerchiefs at the time when shirts are sold, thus increasing greatly the dealers' profit through the sale of multiple items which cost no more in overhead and time than the cost of selling only one item.

A recent survey conducted by our Market Research department discovered that where ties and shirts are displayed separately, only 7 ties are sold to every 100 shirt customers. Where ties are displayed with shirts, but not co-styled, 30 ties are sold to every 100 customers who buy shirts. However, when ties and shirts are styled together and displayed together, 62 ties are sold to every 100 customers.

Stimulating the impulse sale through the strategic placement of these related selling island tables in heavy

traffic flow centers induces store traffic into the rear and to as many parts of the store as possible. As in a supermarket, the most important reminder items are placed near the cashier's desk where the unwary consumer picks up two or three additional items. The principal point of all merchandising is to get the goods out where the customer can see and feel them.

A further explanation of the "on top of the counter" theory combined with display and national advertising is shown by a test made by the Saturday Evening Post.

Our test on this angle covered a period of five weeks and was made in three stores simultaneously—in a clothing store in a small city, in a department store in a medium sized city and in a haberdashery in a large city.

The first two weeks we asked the stores not to display Arrow merchandise in the windows or on the counters. Sales were average in respect to the normal operations.

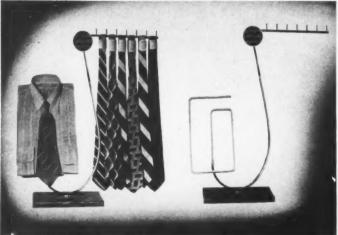
The third week we asked the stores to display Arrow shirts in their windows and on their counters. The resultant sales showed a 23 per cent increase over the previous week, which was also 23 per cent above average.

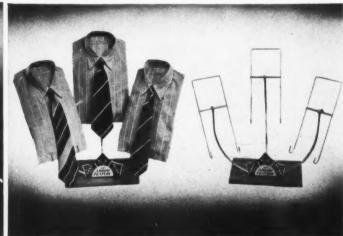
The fourth week related item trims and display cards were added to the same window and counter displays plus a reprint blow-up of our national color advertisement which appeared in a publication that same week. The result showed a 20 per cent increase in sales over the previous week and 43 per cent above average.

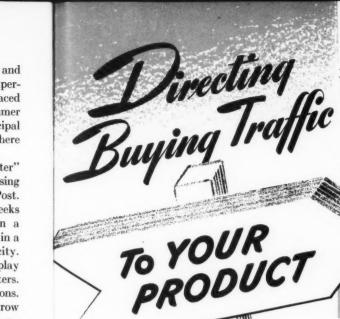
The fifth week we asked the stores to remove all Arrow displays from counters and windows. The sales were 19 per cent less than the previous week and only 20 per cent above average. We found that the sales results were in exact proportion to the peaks of national advertising coordinated with counter and window displays and hooked up with related selling units.

This latter survey may not be extensive enough to establish definite national figures. However, if all our accounts followed our related selling program and instructed their display managers to tie in their window and counter displays with current national displays, we know they would have an increase in sales. That increase would be sufficient compensation to warrant whatever effort the displays would entail.

Three "on top of the counter" units by means of which ensemble sets of shirts, ties and handkerchiefs can be arranged to blend in harmonizing or contrasting colors.







IN THE HOME

- **BOOKLETS & FOLDERS**
- PREMIUM GIVE-AWAYS MAGAZINES
 - 5 RADIO NEWSPAPERS

Just remember this—your product is bought at the retail outlet. That's the vital spot where final buying decisions are made.

Your publication, radio and direct mail messages may have "gone to town" ... a definite desire to own and use your product may have been instilled in the mind of your buying public, BUT - What about the dangerous span of time which will elapse before those shoppers can be within seeing and reaching distance of that package of yours of which you are so justly proud?

What provisions do you make to follow through during those vital hours and keep that spark of desire burning . . . and combat intensive efforts of competition to sway that desire their way? For, just as sure as night follows day, there will be those competitive impacts.

Keen and successful advertisers have known this for years. That's why you'll find persuasive arguments, appealingly illustrated, directed to their consuming





24 SHEET POSTERS, STATION POSTERS ON THE HIGHWAYS WAGON POSTERS and CAR CARDS



AT RETAIL STORE

- WINDOW DISPLAYS
- WINDOW POSTERS

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1 FLOOR STANDS (ISLAND DISPLAYS)

2 BACK BAR DISPLAYS (FESTOONS)

3 BANNERS AND STREAMERS

INSIDE THE STORE



DISPLAY CONTAINERS, CARDS CUT-OUTS, JUMBLE BASKETS

ON THE COUNTER



1 RECIPE BOOKLETS
2 PACKAGE INSERTS

3 CARTONS, LABELS, WRAPPERS

4 CALENDARS

IN THE HOME

public all along the routes traveled by shoppers... on main highways, in public conveyances, in store windows and in the stores... directing buying traffic to their products.

Forbes creates and produces items for such direction of buying traffic; successful items stemming from sound market sense, creative ingenuity and precision volume production.

WHILE THEY LAST!

For many months we have been distributing to our clients reprints of editorial articles, case histories, etc., pertaining to the direction of advertising and selling messages to consumers IN THE HOME, ON THE HIGHWAYS and IN THE STORE. If you'll indicate your desire for such items (some are listed below) on your business letterhead, we will be glad to fill these requests while the supply lasts.

MERCHANDISING WITH CALENDARS
A CHECK LIST OF 23 USES FOR PACKAGE INSERTS

COUNTER DISPLAYS
WINDOW DISPLAYS

DISPLAYS ARE A MAJOR SELLING MEDIUM WHAT THE DRUGGIST WANTS IN DISPLAY

MOTION IN DISPLAY

HOW G-E PROMOTES BULB DISPLAYS

A SYMPOSIUM ON POINT-OF-SALE

MAKING POSTERS HUMAN AND KEEPING 'EM THAT WAY

PLANNING POSTERS FOR MAXIMUM RESULTS

LITHOGRAPHY FOR ADVERTISERS

FORBES LITHOGRAPH COMPANY

NEW YORK . CHICAGO . GLEVELAND . ROCHESTER



Distribution problems of display material

by Arthur W. Ramsdell

PRACTICALLY all of our point-of-sale material nowadays is designed for use in what is commonly known as the self-service super market—where displays and merchandise are exposed constantly to heavy traffic, large sales potential and rapid turnover. And where, because of those very conditions, competition for display and display space is exceedingly keen.

In these stores our men build mass displays of merchandise in connection with the installation of eyecatching promotional material that is sometimes animated, sometimes not animated. The work isn't what you would call a bed of roses. But it's a lot easier today than it was a few years ago, because we have been able to work out an intelligent program which gives us what I call "maximum efficiency with a minimum of trouble."

Most super markets are full to the bulging point with merchandise piled hither and yon; aisles are narrow; space is at a premium. Small wonder super market owners are prone to tear out their hair at the sight of a manufacturer's representative who wants to display his particular merchandise in "the best spot you have in the store." Small wonder a request for space to do "some sampling" leads the retailer to throw up his hands and bellow mightily, "So what?" It is probably all very irritating to the merchant. And it has had its effect on him; it has brought about a condition.

Today, in order to command the attention and the space he may be entitled to, your display representative must be in a position to come in with a sound program that will really make Mr. Retailer sit up and take notice. "It's got to be good!" Something different, something good, something that will obviously help to sell more merchandise faster. Borden men have actually been able to do just that these last few years.

Our success with store display and promotion pieces has hinged upon three fundamental factors:

PACKAGING CATALOG

- 1. Thorough, intelligent pre-testing.
- 2. A sound, practical approach to the retailer.
- 3. Effective display of merchandise.

Until our organization reached the point where it recognized fully the importance of those factors, the going was tough. Once over that educational hurdle, the journey was comparatively smooth. Let's take a good look at those three simple steps—one at a time.

To say that promotional material ought to be pretested intelligently and thoroughly doesn't exactly come under the heading of front-page news. However, it is a fact that a display piece in a home office and the same display in a super market are quite likely to look like two different things. What appears on the floor of my office to be a sure-fire hit can turn into a terrible dud inside a grocery store. What sometimes looks like a powerhouse to our staff, in dignified office surroundings, quite often looks like a burned-out bulb in a great big, busy super market. We put our ideas over the jumps by testing them out under practical operating conditions in—of all places—typical super markets!

Pre-testing is done by our own retail salesmen under the close supervision of the home office organization, because our salesmen know and understand store merchandising. It is their business to display and merchandise Borden products every working day of their lives. Give any one of them a week with a display piece in a typical market and he will tell us in no uncertain terms whether it is good, bad or indifferent—and that takes in the consumer and retailer point of view as well as his own. Of course, we employ detailed report forms which serve to boil down personal opinions to a statistical double-check basis. In the main, after reasonable periods of practical operating situations under the eyes and ears of men who really understand the problems of modern super market merchandising, every display receives dependable rating, good or bad.

In pre-testing operations we are particularly interested, of course, in the ability of a piece to sell merchandise. If it cannot perform that function to the satisfaction of the dealer as well as ourselves, it just doesn't make sense. Beyond actual sales results are other pre-test factors which are highly important—ease of handling, for instance. When you make a display difficult for either salesman or retailer to handle you are bucking up against old man Human Nature

A three-dimensional head of Elsie tops a mass display of Borden's merchandise. Every one of such units is thoroughly pre-tested under practical, typical, super market conditions before it is released to dealers throughout the country.



PACKAGING CATALOG

and you know what he does with problems that are hard to handle. He just goes right around them without so much as a sidewise glance.

We watch color very closely in our displays. Probably nowhere in modern merchandising is the problem so important as in a super market. A display that cannot stand the gaff of a myriad of multi-colored backgrounds is lost in the shuffle. It will not and cannot perform satisfactorily. A change in color here or there will often make a headliner out of a possible flop.

Let me revert for a moment to the home office versus store comparison that I mentioned a few paragraphs back. Lighting conditions in retail outlets are quite often very, very different from those in offices. You cannot tell what effect store lighting will have until your display has been thoroughly tested under actual store conditions and you're generally in for a rude awakening once your pet display piece is under those conditions.

No pre-testing operation would be complete without a comprehensive study of dealer reactions. Because we test every display in many different retail outlets, we come out with a worthwhile, reliable cross section of retailer opinion. Unless the piece can sell merchandise entirely on its own in a self service market, it is of no use to the retailer or to us. We watch closely in pretesting the space necessary for both the display piece and its accompanying merchandise. Unless the retailer gets rapid turnover and good return for the space we occupy, our promotion is not successful. Before we get into production with any display piece, we must know definitely how much space and merchandise are required to make our ideas pay the merchant.

The second phase of our program is a sound, practical approach to the dealer. This means simply that we try to do an honest-to-goodness selling job before installing displays. We want every dealer to know what our displays will do and what they won't do; we want him to be thoroughly familiar with our plan. We want him to know when we're coming in with a display, when we propose to remove it. In short, we believe it is just as important that he be sold on our promotions as on our merchandise.

In order that our salesmen can be placed in a position to do the job the way we know it should be done, they are provided with a good schooling in the experiences we have had in our pre-testing operations. They are told to the last detail what the tests have proved. We also provide them with a selling tool—a portfolio from which they can talk. It is brief; it is "fast." In no sense of the word is it a canned sales talk.

It shows the merchant a good picture of the display we are talking about. It shows him the type and kind of a display we intend to build. It points out clearly what we, as a company, are doing to help him sell our merchandise. It puts our representative in a good position to make a sound, practical sales presentation within a matter of a very few minutes. In less than three minutes the listener knows the whole story.

The third guidepost in our analysis is effective display of merchandise. Pre-tests, of course, and experience in grocery merchandising pretty well take care of the problems that rear up under this general heading. New manpower and human nature force us to keep a steady spotlight on the subject of how to install displays. It always has been and always will be only natural for people to want to build "picture book" displays that look nice but sell little merchandise.

Oftentimes it is thought that the more merchandise you pile in a mass display, the greater will be your results. That isn't always true by a long shot. If the merchandise isn't easy to get at and easy to pick up, all the goods in the world won't make a woman help herself. She just isn't going to be bothered if the display looks as if it might topple over if she should pick up a package or two. She'll run away without even trying. She isn't going to risk the embarrassment of bringing down your house of cards! Neither will she buy if the displayed merchandise is not properly and plainly priced.

In a nutshell, our salesmen apply four effective principles of display merchandising to every installation. They make all Borden displays fairly shout:

- 1. "Attention everyone! Look this way!"
- 2. "Step closer and take a good look!"
- 3. "Don't just look at me-pick me up!"
- 4. "Do more than pick me up. Buy me!"

Believe me, that is effective display of merchandise.

Dairy freshness of the product is suggested by the simulated flow of milk from the large cans. This display sells merchandise on its own in super markets.



PACKAGING CATALOG

2 Bright Ideas

TO BEAT THE BOARD SHORTAGE



UNCLE SAM has the priority on pulp and paper board this year . . . and there isn't going to be enough board to go 'round. There are no restrictions on ideas, however, and Einson-Freeman makes brains take the place of board.

We offer herewith two patented constructions that are not only board savers, but weight savers and money savers as well. The "Two-faced" and "Skeleton Mount" will enable you to get your full quota of displays, despite the board shortage, and at no increase in cost . . . And if Einson-Freeman produces them, you know that they will be better than average! . . . Details on request.

EINSON-FREEMAN CO., Inc.

Resourceful Lithographers

STARR & BORDEN AVENUES, LONG ISLAND CITY, N.Y.





"Skeleton Mount" (right)

On the surface, it's a conventional display unit... but the poster is printed on regular paper stock, mounted on two strips of board, top and bottom. Merely setting up the easel creates tension, keeps the paper panel smooth at all times. It comes in one piece and folds in either two or three sections for shipping.

The Einson-Freeman "Skeleton Mount" shows a 14% saving on finishing, permits a 42% saving on shipping containers, has 44% less weight which means correspondingly lower costs in shipping.

"Skeleton Mount" can carry any kind of subject matter, is available in any size. Takes less space in salesmen's cars. Requires no assembly; simply unfold and set up the easel... Samples are ready when you are!

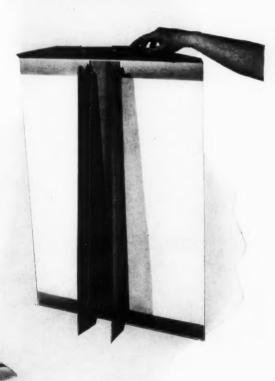
Patents applied for by Einson-Freeman Co., Inc. and Richard E. Paige.

"Two-Faced" (left)

is a display panel printed on both sides and hinged to the easel at the bottom. After one face has been displayed, simply turn it over and expose the other side.

This double-barrelled unit affords display for the special occasion and general utility, Mother's Day and any day; for use through two periods, such as Christmas and the New Year; for featuring a deal on one side and the line on the other... You buy one display, but get two, with longer life, increased utility. The extra cost is slight for the extra value. Patented by Einson-Freeman Co., Inc.





DVERTISERS have quit buying printing and paper. They are starting to buy people. And just as soon as you start to think in terms of people, no matter what you think your business may be, you are in "show business," whether you like it or not. Whatever you are, manufacturer or merchant, monarch or dictator-and especially if you are a dictator-your success ultimately depends on the emotional response you are able to evoke from people in the mass, by the effective application of what the world calls "showman-And the better showman you are, the keener is your realization of this fact: That people in the mass constitute only the raw material you are to mold and that numbers alone mean almost nothing, but the depth and vividness of the impression you make count for pretty nearly everything.

Now, at long last—and it has taken a long time indeed—window display is on the way to formal recognition as a responsible medium. Thanks to the A.N.A. survey which recently won the Advertising Award, it is beginning to be established that store windows have a definite, clearly computed circulation, comparable in low cost and high sales potential with the most effective of other advertising mediums. But circulation, at best, constitutes only an opportunity to sell. For paradoxical as it may seem, the only circulation that does you any good is the circulation that stops circulating! In other words, it is the people who stop to look. And it is just ordinary arithmetic that the more people you stop, the more chances you have to sell.

How are you going to do it? How are you going to apply the tried (but not trite) principles of stages and screen to catch and hold your audience? For lesson one, let's go to Hollywood, to one of the simplest, most effective ways to appeal to a larger audience—the familiar "close-up."

Once upon a time, in the primitive days when action was more important than emotion, and the hindmost member of the audience in the small store nickelodeons could see the villain twitch his eyebrows and the heroine gush glycerine tears, there was no need for enlarging faces to the dimensions of a good sized barn. But the movie houses grew in size and screen plays increased in subtlety. And when the last standee in Radio City Music Hall is likely to be a half-mile from the screen, there is only one way for the rear ranks of the audience to understand or be moved by the play of emotion in the actors' faces.

Just so, the "close-up" in display operates to stop more people. (1) It is seen and understood farther. (2) It is seen and understood faster. And it stands to reason that the more people who see it, the larger its "radius of visibility," the larger is the display's "selling radius," or zone of effectiveness. But after you have arrested attention by the sheer, gigantic size of your close-up head, how are you going to concentrate that attention on the particular feature you wish to emphasize? That's easy. Just turn to the stage again for your answer, and turn the spotlight where you want the eyes of your audience to stop. The striking, almost Rembrandtesque

1. Light concentrated on the lips and nails focuses buying attention on this cosmetic display. 2. This Old Overholt display brought 100,000 requests for a reproduction of the dog's head for framing.





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3. Hooking up a display with a cartoon character known to millions. 4. The co-ed who appears on this football display was crowned Miss America in September at the annual Atlantic City Beauty Pageant Contest.

effect achieved in the lighting of a beautiful girl's head, with the light concentrated on the lips and nails and the rest of the head in shadow, was an excellent means of focusing buying attention in a recent Revlon display for the company's cosmetic line. (Fig. 1.)

Now, to borrow another one of the successful strategies of screen and stage—the star system. If you can add to the "pull" of your picture the popularity of a great personality, you are fortunate indeed! But few advertisers have the luck-or foresight-to pick "Miss America" in advance, as happened this year with the Sylvania Tube football season display (Fig. 4). But if you can't find a "natural" like that in a living personality, you might be fortunate enough (if someone else in your line hasn't beaten you to it) to hook up with a character whose only life is on the screen and printed page, but who is more alive in the affections of young and old, the whole world over, than any other you can name-like another Sylvania tie-up with-guess what?-Donald Duck (Fig. 3). Or, taking another leaf from the book of Hollywood and Broadway, if you can't find a readymade star, make one. It can be a real live one, like the freckled little urchin whose charm is rapidly becoming famous, in a hundred thousand grocery stores, as the "Maine Potato Boy" (Fig. 5). You can animate a well-known trade character-in more ways than one. As, for instance, by taking the leaping Kangaroo of O'Sullivan's Rubber Heels and attaching it to the display by a spring that vibrates realistically at every hint of a draft (Fig. 6).

Next to performers in importance is the background, the scene. And from Belasco to Bel Geddes, the stage and screen have been striving to get the maximum of realism, color to enhance the atmosphere of the play. Hollywood has spent millions in an effort to secure greater realism through Technicolor. In fact, it is freely predicted that it won't be long before the black and white film will follow the silent movie into limbo. This movement in motion pictures has an exact parallel in the recent development of an amazingly realistic process of reproduction, combining direct-color photography with the deep-etch process of offset lithography. You can get a picture of food so real and vivid in color that you can almost smell it. In fact, so effective has it proved in the case of the Schaefer Beer food display, that dealers kept the display in four and a half times as long as they ordinarily would, because of the increased sales on every incidental item illustrated (Fig. 7).

Next after color comes form. It is virtually an axiom that the nearer you can come to a stage setting in a display, the farther away it gets from a mere flat background, the more likely it is to catch the passerby's attention. And because it is obvious that a display has to compete for attention with the three-dimensional merchandise in the window, all the ingenuity and the best creative efforts of display producers have recently been directed toward making the display simulate the appearance of substance—of solidity, thickness, depth. In its simplest form, it may be only a "close-up"—a greatly enlarged version—of the package itself. But nowadays

it does not do for it to be the mere conventional "giant package." It must possess intrinsic usefulness—in the language of the modern industrial designer, "functional utility."

The apparently solid wooden frame around the "Old Mr. Boston" portrait, which is really all cardboard, is a relatively simple example of the structural, architectural quality that is brought to its highest point in the prizewinning Coty "L'Aimant" display which is virtually a "showcase" within a window, with its interesting illuminated cylinder of transparent rigid plastic sheeting. So, while the more exclusive type of retail outlet is sometimes reluctant to permit obvious cardboard displays, this type of three-dimentional unit finds a welcome even in the "snooty" specialty shop.

No one who saw the "Julius Caesar" in modern dress as produced by Orson Welles could fail to be impressed with the possibilities of the use of light, when it could transform even a bare stage and bare walls to something magic and emotionally evocative. Or go outside on the Great White Way (and there is one in every city nowadays). All you have to do is to look up any night at the electric streamers along the tops of the buildings to see how highly the advertising value of light is regarded by advertisers who literally spend millions each night to keep billions of bulbs and miles of neons brightly illuminated. But just look what one lone little bulb and a flasher can do in a display to give the effect of many dollars' worth of "reminder" sign advertising for a

fraction of what actual neon signs would cost. It lights up the oval trade mark in red and the key-word "Whiter" in the message in white, in one flash. You can even give the effect of motion with a flasher, as in another Sylvania tube display, in which a pretty girl's eyes lighted up in a rapid "wink" as the message flashed on.

Going still another step up in the scale of "stopping possibly the most powerful of mechanical methods to increase the pull and attention value of displays is motion. Why is motion so powerful a "stopper" in display? Well, just consider what would have happened to primitive man if he didn't see the least little stirring of a blade of grass as a saber-toothed tiger sneaked up on him! To go back to the stage and screen, motion display is as far ahead in interest of the ordinary "still" display as the modern motion picture is to the old-time wax works group or "living statue" tableau. And just as sound has been added to the motion picture, so we now have motion plus light to make the motion display "talk," to "spotlight" the merchandise or bring out a salient selling point. Take that prize-winning example of humor and human interest-or shall we say canine interest-in motion, the Sergeant Skip-Flea display, with the poor little terrier blinking in comical distress as he scratches himself industriously with his hind leg.

Last of all—or, rather, it should more properly be first of all—comes the most potent "hook" of all—tying up with what most interests the largest possible

5. Another live display, the Maine Potato Boy, whose charm is becoming famous in a hundred thousand grocery stores. 6. This leaping kangaroo is animated by an attachment to the display, a spring that vibrates realistically. The kangaroo character thus realistically acts out the company's slogan in a whimsical and amusing way.





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proportion of the potential purchasing public for the product at a given time. This may be something taken out of the daily news, the headlines that hit everybody in the face. What is the one word of three letters in the English language that will infallibly shock the most casual passer-by to a standstill? You're right. It's "WAR." An insecticide window display, for example, used this association of ideas legitimately for attracting and holding attention, with complete relevance to the theme of warring on moths and other insect pests. Or it may be something that vitally and dramatically affects the life of practically everyone at some time, like the sick child sitting up in bed with the suggested inference that the youngster is better because a B & D fever thermometer was handy to detect his illness in time. It also proves the truth of a recent survey that "Babies-Just Babies" are just about tops as "stoppers." Or it may be something which is the principal preoccupation of the entire fair sex at any time, like the direct color photographs of five smart miniature fashion figures by the Swedish sculptress, Margit Nilssen, each dressed in a garment which was specially designed by a famous Parisian couturière to harmonize with Cutex nail polish colors! Can you imagine the surprise of any woman to see the latest styles from Paris-or the newest hairdress or jewelry, as in the Coty "L'Aimant" display-in a drug store window? This application merely proves the rightness of a principle far too seldom used in display-the power of the unexpected.

Or it might be the one thing that will infallibly stop those engaged in one particular sport or occupation. Here are two cases, both examples of exceptionally shrewd use of male psychology and sound market analysis. It is obvious that men interested in hunting are good prospects for a whiskey. They are exposed to all sorts of weather in the pursuit of their favorite sport. They get chilled, tired and need the quick warming and "pick-up" of liquor. Now, what would get the attention of hunters quickest? An Old Overholt display showed the huge head of a magnificent pointer and received no less than a hundred thousand requests for a reproduction of the dog's head for framing-before half the displays were in the window (Fig. 2). And since customers had to go into the store to get the postal to write their request for the picture, sales naturally soared.

The popularization of history and science is another "puller" of the first rank in display. Think of the huge success of such pictures as "Pasteur" and you can see how the fascination of history, together with the drama of discovery, made the Bausch & Lomb series of historial paintings, depicting the progress of optical science, "best sellers" for the past five years. And when a really epoch-making—or, rather, epoch-changing—motion picture comes along, like that Walt Disney phenomenon, "Snow White and the Seven Dwarfs," which will probably still be running and being revived five years from now, it gets out of the rut of the ordinary, routine motion picture tie-up. Especially if you can make it so completely apt an illustration of a basic selling slant as the Royal Typewriter motion display—"Tap

like Snow-White—or Hammer like Dopey," which demonstrates perfectly the adjustable touch control features of the machine itself.

7. This food display in color creates a picture so real and vivid that dealers kept it four and a half times more than an ordinary display. Almost every incidential item illustrated in the display also showed a marked increase in sales. 8. A vital and dramatic display, making use of the ever popular and interesting health theme.





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But in all these matters, after all, the customer is only a spectator, not a participant—only a part of the audience and not one of the cast. He may mentally





"live himself" into the play or picture, but the most effective of all methods for getting the customer actively aiding the sale to himself is actual, physical participation to make him (or her) an actor in the play. The simplest of these devices to get the customer to sell himself is the "jumble tray" idea. Now, why do you think a woman is tempted to pick up a can from a jumbled heap, far more than from an orderly array? No-it's the exact opposite of the usual explanation. The answer is far more subtle than that. Even though she may not realize it at all, the shopper reaches for that can because of her inborn instinct for order. She wants, instinctively, to rearrange that disorderly heap neatly. But after she gets the can in her hand, she doesn't really know why she picked it up. So the equally feminine possessive instict starting to operate at this point, once she has it in her hand, she keeps it and the jumble-tray has again justified its existence with another sale.

Another device to entice the customer to come up to the counter and "operate" the display is the "Dial-og" stunt, where pulling down a little protruding handle or series of handles causes three or more exchanges of conversation to appear in "balloons." And once one customer starts fooling with the gadget, you can trust the curiosity of the rest to come over and watch and try it for themselves. Which keeps them busy and happy while the clerk is waiting on those before them and earns the everlasting gratitude of the harassed and busy dealer. Result: Display stays up twice as long.

busy dealer. Result: Display stays up twice as long. The "drama dozen" to bear in mind for dramatizing your display are these:

Size 2) Spotlight 3) Star 4) Sex 5) Color
 Form 7) Substance 8) Glorification 9) Illumination 10) Motion 11) Interest 12) Participation

The principle back of all these "display dramatizations" is, clearly and unmistakably, the principle of entertainment—of the stage, screen, Broadway—"show business," if you will. What window display needs most today is putting more "show" in the show window.



9. An effective example of motion and light display, making use of a popular character. 10. Designed for dealers carrying either of two brands, this full color lithographed display card reaches the dealer with two giant reproductions of packages. 11. Typical of the modern use of direct color photography is this Hoffman die-cut window display. All Photographs Einson-Freeman Co. Inc.

OU have a major investment of time, energy, and money in that product package of yours. You have advertised and promoted it to implant product name, appearance, and advantages in the minds of the buying public. Keeping that story fresh in those minds all the way along the route from the home to the dealer's store entails further important expenditures. What insurance have you that those expenditures will have a fighting chance to grow to the full maturity of sales? Counter displays will provide such insurance.

Your counter display presents your sales story, in direct and active association with your product, to buyers—shoppers who have entered that store to buy something. It enables you to get in the "last word" during the vital few moments when buying decisions are being made, because it's the last link in that chain of convincing facts and persuasive arguments you've been presenting to Mr. and Mrs. Consumer relative to your product—the more important argument because it is the last link.

Counter displays enjoy all the advantages inherent in point-of-purchase items—power to spot selling effort in specific geographical sections to accomplish one or more of many objectives; controlled intensity of selling effort according to amount and kind of buying traffic, and controlled intensity of effort according to amount

and kind of display material distributed to an area; class control according to type of buying power in an area—plus the fact that counter displays operate right out on the dealer's counter, within easy reaching distance of waiting shoppers.

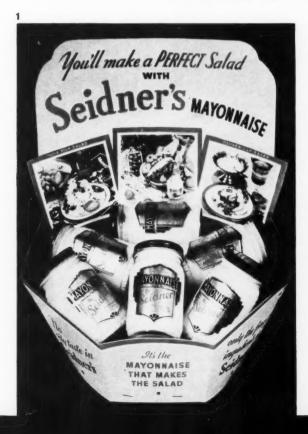
Of all forms of counter displays, those lithographed or printed on cardboard with the full dramatic power of color provide the greatest possibilities for versatility, change of pace, up-to-the-minute tie-ins with trends, diverse copy slants and special promotions. Truly, streamlined efficiency—at extremely low unit cost.

Counter displays have two primary functions to perform: First: the display must instantly impress the dealer as a real sales aid, meriting a portion of his valuable "out front" display space, and it must be of practical construction, permitting of quick and easy set-up. Second: it should be so executed that it will work on the sensibilities of shoppers in an orderly psychological approach; suggesting pick-up of the product, inviting inspection of that product, extolling product virtues, suggesting and illustrating product uses, dramatizing product superiority by picture and copy and urging immediate purchase of that product.

General functions of the counter display are:

(a) Supplement and complement other advertising by

Jumble display basket presents product on the counter in an inviting jumble array.
 Die-cut product card presents ten tubes within easy reach of shopper; features price, reminds of forgotten needs and prompts impulse purchases at point-of-sale. Photos The Forbes Lithograph Co.









3. Combination shipping and display container. Cover is quickly lifted into display position, which carries the same eye-compelling color pictorial as the large window display (left). Photos The Forbes Lithograph Co.

identifying the product to shoppers as the one they heard advertised on the radio, read about in magazine on newspaper advertising, or saw illustrated and described on the highways—on posters, car cards or window displays.

- (b) Remind the shopper of forgotten needs.
- (c) Develop an impulse purchase by shopper who entered the store with some other purchase in mind.
- (d) Combat other point-of-purchase advertising for competing products.
- (e) Undermine competitive advertising in other media which has instilled a desire in shopper's mind for a competitive product, by last-minute persuasion that, after all, your product will give best results and greatest satisfaction.

Countless specific functions can be performed by counter displays. The following undoubtedly will suggest many others: Demonstrate the product; tell the price; feature product uses; promote the sale of related items; feature combination offers; outline special premium offers; describe a contest; sample the product; introduce a new product; feature a new package; distribute supplementary printed material while showing and describing product; dramatize product trade mark; feature radio stars, and many more.

These specific functions, together with the general functions, should be kept in mind when considering and planning a counter display. Other factors which must of necessity influence decisions regarding the specifications of displays for counter use are: the product itself; the kind and scope of the market; tie-in with general campaign; seasonal factors; distribution problems; attitude of retail outlets; change intervals; and, of course, the budget.

An intelligently conceived and well-organized counter display will perform several functions—a single-function display will not stand much chance of winning dealer acceptance. Don't assign too many tasks to the display, however, as it may fail to perform any one function well.

In developing the display, a number of characteristics must be kept in mind and weighed thoroughly to establish the proper importance of each in the final makeup—basic appeal, merchandising idea, art treatment, construction, extra or novel features, economy and copy are some. For instance, copy on counter displays need not be as brief as copy used on posters and window displays, because the viewer has a longer time in which to absorb the story. There should be a fast-reading identifying element, plus more leisurely copy and illustrations for the information of shoppers who may desire to know more about the product, what it will do, or what can be done with it.

Types of counter displays

Naturally, there are many different kinds of counter displays, but most of them will fall within a few general classifications. For instance, there's the most simple type of all—the counter display card. This is a single-plane display—either square-cut or die-cut into some interesting shape—that stands on the counter, either by itself or in conjunction with an arrangement of the product packages, bearing an illuminative and instructive printed or lithographed message.

A step beyond this simple display card is a similar single-plane display having a quantity of the product packages fastened to its face in one of several ways—with rubber bands or metal clips held by die-cut tabs, fitted into die-cut openings, etc. Product packages are attached before card is shipped to the dealer. All dealer has to do is place filled card on his counter—it will do much of his selling job for him.

The combination shipping and display container is another type of counter display which carries the product to the dealer—a lithographed or printed cardboard con-

tainer that is shipped to retail outlets filled with the product. The dealer simply raises the cover into display position and sets the container on the counter as a working display. The product is right there in the container, within easy reach of shopper, in conjunction with an interesting and colorful product message.

Five other types of product displays are:

- T) A display piece so designed and constructed that attention is focused on actual product packages these product packages being introduced as an integral part of the display itself, on special shelves, in die-cut openings, on supporting easels, or by some other means combining display and product packages into a single coordinated unit.
- 2) One similar to the foregoing display, and so constructed that an illusion of some action is created—such as product pouring forth from the package—without the expense of mechanical apparatus.
- A display similar to either of the afore-mentioned, and at the same time holding and offering some descriptive booklets or folders, recipes, etc.
- The same type of display, displaying and describing a combination consumer deal.
- A similar display, carrying other products that can be used with the advertised product—a related item display that appeals strongly to dealers.

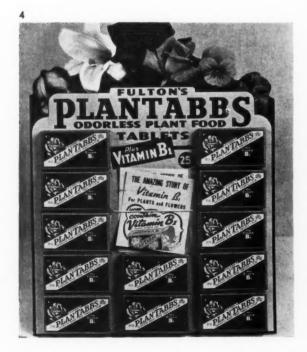
Then, of course, there's the display that features or

presents a premium. Such a display can carry a product package and illustrate the premium; or it can be built around the premium itself, and carry illustrations and copy descriptive of the product and product uses; or it can present the actual product package and the premium.

And don't overlook that popular item, the jumble display basket, and ramifications thereof, wherein the product appears in an inviting disorder. Sighting the product in this jumbled array, the shopper is prompted to pick up a package and examine it, without any qualms about disrupting an orderly counter arrangement—and tests have proved that if you can get the product into the shopper's hand, the sale is more than half made. The display basket is shipped to the retailer folded flat in the shipping container with the product. The retailer quickly places the basket on the counter and tosses in the product, immediately creating an inviting jumble of the product backed up by an attractive and convincing picture and word story on the display basket's panels.

Novelty counter displays form another classification well worthy of consideration, particularly where the budget will permit application of extra attention-getters to the display pieces. For example, an interesting device or novelty attachment can be made a part of the display, giving the waiting shoppers something to dosomething to twist or move—which will concentrate their attention on that display and that product story while they await their turn at the counter. The "kid" in

4. This product might be forgotten by both retailer and user if a counter card weren't on hand as a reminder. Back of each packet is a lithographed representation so the card shows no glaring empty spaces. Photo Stecher-Traung Lithograph Corp. 5. This counter display is a "natural" for creating impulse sales. It includes two actual cans of the product in two sizes. This is a related item display since space is provided into which the dealer can insert an actual box of strawberries. Photo The Forbes Lithograph Co.





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6. Three of a series of counter baskets for package display, illustrating (in direct color) the uses of the product. Photo U. S. Printing and Lithograph Co. 7. A small but effective counter display—unique in construction so as to display a quantity of the product in a minimum of counter space. Photo The Forbes Lithograph Co.

them will respond to this type of feature almost every time. Light, or motion, or both, present other opportunities of making the counter display a compelling one, although the cost factor of these features is a high hurdle to get over in most instances.

Combining cardboard and some other material, such as transparent cellulose, is another way of adding eye appeal to a counter display. The "crystal box"—a printed cardboard display container having transparent front and ends—and the recent Sunkist Lemons jumble display basket with its transparent front panel, are examples. In items such as this, the full impact of the product's natural and colorful eye appeal is readily apparent through the transparent sides.

Size and construction, two other factors meriting careful attention, must be governed by type of product, class of retail outlets, the principal job which display is expected to perform, and other considerations.

Construction can be unusual and commanding, but not at the expense of practicability. Storekeepers have no time to jig-saw-puzzle their way in setting up the display. Surveys have been made among retailers in an effort to determine what sizes are most acceptable. The second installment of What The Druggist Wants in Display, a survey by the Institute of Package Research, reported in the September 1940 issue of Modern Packaging, contains interesting data along this line. They indicate, among other things, that while the retailer is inclined to award slightly more of his valuable counter space to displays which carry some of the product, effort must be made at all times to keep display as compact as possible.

Properly conceived, intelligently developed and attractively executed counter displays will sell merchandise and they'll do it whether they are operating alone or as part of a complete campaign. Counter displays have been used successfully for introducing a new product into new markets, progressively clear across the country, when no other medium of advertising was employed. Also, counter displays are being used right along to point up and add finishing touches to a wide and comprehensive advertising campaign composed of many media, and they are doing that job at the vital and all-important point of purchase.

Russell Z. Eller, Advertising Director of the California Fruit Growers Exchange, recently very aptly classified point-of-purchase advertising when he said that it "is challenged by no medium and it challenges none. It simply completes the joining of all hands in the final act of the selling scene."

The point of purchase is the place where the shopper shops; where the buyer is in a buying mood; where he can buy; where he will buy—if properly guided. Counter displays provide you with the last opportunity of guiding that buying action *your* way.

Don't make the mistake of looking down your nose at the counter display, and considering it as just a supplementary item to be thrown together haphazardly and chucked out among retail outlets promiscuously. Recognize it for what it is—a happy combination of two economic factors: major advertising medium and vital sales tool. Only then will you see that the responsibility for developing it is placed in competent hands. Only by doing this can you be sure of obtaining a counter display which will serve you successfully and economically.

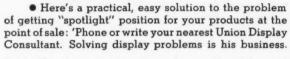
Product packages that have been well planned, tastefully designed and carefully produced on qualified materials for proper distribution of a valuable product, deserve good counter displays.

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Ina union







Behind him is an organization with more than 10 years' experience creating successful displays . . . set up for prompt, economical manufacture of modern displays of formed wire, sheet metal and fabricated material in any finish.

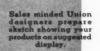
All over the country . . . in drug stores, oil stations, department stores, etc. . . . counter, floor, wall and window displays designed and produced by Union Steel are recording outstanding sales successes.

Sales and advertising managers who have seen the almost limitless possibilities of these modernistic creations from wire by Union Steel Consultants and Designers, are now devoting more of their appropriations to this more permanent type of point-of-sale display. These Union Steel displays are designed to attract attention and arouse a desire for your product, and close the sale with or without the aid of a sales clerk. Try these self-service displays and in all probability you will be amazed to see what can be done with wire by a Union Steel designer.

UNION STEEL PRODUCTS COMPANY Albion, Michigan











UNION STEEL PRODUCTS COMPANY

801 Pine Street, Albion, Michigan

WIRE DISPLAYS Conserve Material and Give High Visibility to YOUR PRODUCT

Floor stands and island displays

by Paul C. Meelfeld

LOOR stands and island displays are practical as well as promotional. On the practical side, they fulfill several distinct utility functions. First, they serve as "extra sales help" during temporary periods when a sudden influx of customers into the retail store finds every clerk "with his hands full." Thus shoppers waiting to be served have their interest aroused, their attention held, and receive a brief but concentrated sales message until a clerk is free to provide personal service. Second, floor stands give dealers additional storage space and make possible a latitude in counter, shelf, and display arrangement that would be impossible if extra space were not available. Third, this type of display furnishes a visual check on display inventory; because floor stands invariably hold a substantial volume of merchandise, the necessity for too frequent, bothersome re-stocking of displays is eliminated. Fourth, because floor stands are generally large and sturdy, they provide an unusually large "arranging area," and accommodate larger units of sale and the more bulky lines of impulse-purchased merchandise.

From a promotional standpoint, floor stands rank high among point-of-sale material that earns a place in merchandising programs. Attractive and portable, they are designed to fit into strategic floor sales spots where store traffic is heavy and where their colorful expanse of illustration and copy will do an effective sales job. Manufacturers find these displays a two-edged promotional weapon. As an effective stimulant to consumer sales, dealers see in them further inducement for stocking merchandise to be promoted—especially during a period when magazine, newspaper and radio advertising are arousing a strong interest in the particular product. Certain types of floor stands are planned to present complete assortments of a product family line. By so doing, they offer such visibly attractive merchandising advantages that dealers are very much encouraged to stock the complete line.

There are four main types of floor stands and island displays. These are as follows:

Corrugated floor displays: These are either "island" stands and can be set on any part of the floor where they can be read and approached from all sides, or are "three-sided" and are placed with backs to a wall, or back to back with another display. Again, they may be flat-top, permitting piling and stacking of merchandise in numerous display arrangements, or they may have one

1. Two step-up merchandise bins give this corrugated floor stand unusual space-saving as well as effective display qualities. 2. This corrugated island display is distinguished by a slim vertical column extending through a merchandise pedestal. 3. Corrugated jumble floor stand display with dominating illustration on base and with large bin to display merchandise played an important part in introducing Swan soap.







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or more bins built into the top to permit piling or jumble arrangement of merchandise. Whatever form taken by corrugated types, each invariably makes use of large base surface area for printing dominant design or display copy. Economical direct printing with rubber plates encourages the use of two or more colors, but generally art illustrations are kept simple. The displays are usually shipped flat, separate from merchandise, but in some instances the "bin" section of the display is so designed that it can contain the actual merchandise in shipment.

Corrugated plus lithograph: These displays differ from the first type only in the fact that a section, panel or partition is quite often mounted with a lithographed sheet to achieve the display effect desired. This may be a particular illustration, a distinctive chart reproducing facsimilies of product package, or numerous other attention-gaining devices. The use and construction is essentially the same as employed in regular corrugated displays, except that the additional cost and less simple setup indicates greater suitability for higher priced items.

4. Flat-top corrugated island display permits stacking merchandise to gain unusual display treatment. 5. A unique counter display for a family of products pushes entire line to retailer as well as consumer. 6. Eye-catching, lifelike illustration dominates copy panel of this "corrugated plus lithograph" stand, while partitions spotlight wide assortment of product line displayed in bin. 7. This floor stand display employs a large waist-high bin to promote entire line with limited use of stock for display. Photos 1 to 7 Hinde & Dauch Paper Co.



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Lithographed on solid fibre board: These displays are among the most expensive floor stands and island displays. Designs, illustrations and copy are first lithographed on sheets, which are then mounted on fibre board. Basic construction of the stands is similar to corrugated stands, sections and panels of fibre board being die-cut to construction specifications, and then covered with lithographed material.

Combination shipping and display boxes: A borderline example of counter and floor stand, which has won great popularity because it serves both as a shipping box and display. When closed, this type appears to be a conventional shipping box, but cutting along taped edges permits unfolding top of box to reveal a display panel

8. This patented combination shipping-display box presents an attractive, colorful sales message when the shipping box is opened for display. Photo Hinde & Dauch Paper Co. 9. This giant package brings the product down off the shelf to a place right alongside of Mrs. Shopper's elbow. Photo The Forbes Lithograph Mfg. Co. 10. Tire accessory display formed of concentric hexagonal corrugated rings, providing three display levels and multiple sign surfaces. Photo The Ottawa River Paper Co. 11. Lithographed jumble basket for floor display of beer cans designed for use near the store door where reminder shopping list on rear panel can work most effectively. Photo Einson-Freeman Co., Inc.

and side wings. The front of such boxes also folds down to form a display panel. Extremely convenient for dealers, this display box is an economical way to earn counter or floor space. The very nature of the box makes it most widely used in corrugated, with simple illustrations and copy printed directly from rubber plates.

Regardless of which type of floor stand and island display is used, experience emphasizes the fundamental that each must be simple in construction if it is to receive maximum use from dealers—must be simple in design and layout if it is to exert a maximum sales effect upon shoppers. Dealers will not fuss with a display that takes too much time to set up, that is, too complicated in construction, that necessitates an inconvenient arrangement of other merchandise displays or display fixtures. Shoppers will not be stopped, interested and sold by a floor stand that fails to deliver a strong message quickly. That most merchandisers experienced in the use of floor stands and island displays appreciate the importance of this fundamental is evident from displays that have done an outstanding job in stores throughout the country during the past year. In view of other merchandising trends, the principle of simplification can be expected to become even more important in the future.

TROMMER'S "Malt BEER AMERICA'S LARGEST SELLING MALT BEER

Look how ORPCO licked the problem of creating "something different" for Trommer's Beer. This display stand had to be more than attractive... it had to be sturdy enough to support a large quantity of heavy merchandise. It's a practical self-service display.

BREMNER BROS. ASSORTED STAR SNAPPY CHEESE CRACKERS

SALES GO UP when displays go up!

... and here's how to get dealers to set up "SELLING DISPLAYS" OF YOUR PRODUCT

• Every sales manager knows how mass displays speed up turnover... but to induce dealers to give your product display preference isn't usually easy. Here's the way many of the nation's most successful merchandisers secure choice floor and counter display space for their merchandise: They provide ORPCO Display Units. These modern merchandising displays are attractive and practical ... made of strong corrugated board and cleanly printed in bright colors... individually designed to fit the product in size, style and color.

We have successfully applied our merchandising display experience and facilities to a wide variety of products. Displays pictured here are typical examples of ORPCO "merchandise sellers". Let us help you with your next display problem. For expert counsel, write or phone our nearest office.

ORPCO DISPLAYS ARE SURPRISINGLY LOW IN COST



Above—This simple counter "jumble basket" boosts sales of an "impulse" item. Left—Bremner Bros. Cookies certainly hold the spotlight when displayed on this trim floor stand. Right—By simulating an actual display of stacked cases, this piece achieves a mass effect for an item that does not lend itself readily to a large quantity set-up.



THE OTTAWA RIVER PAPER COMPANY . TOLEDO . OHIO

SALES OFFICES:

200 So. Rademacher, Detroit, Mich.

82 West Washington Street, Chicago, Ill.



A decorated sheet metal display well suited to function as an illuminated counter exhibit for a glass packaged product. Metal displays offer strength, rigidity and permanency. Photo The Advertising Metal Display Co.

Decorated sheet metal displays

DECADE or two ago, the standard practice followed by most manufacturers to get their goods in the hands of dealers was by regular or "high pressure" methods. They would then be content to sit back and rely on the initiative of the retailer and his clerks to sell the goods. Having completed the physical distribution of his goods, the manufacturer felt that he had adequately performed his part of the complete selling job.

In recent years, merchandising problems have become infinitely more complex. Today, there are thousands of items competing in the same field where formerly there were only a few. It is said that the average retail druggist carries in stock anywhere from ten to twenty thousand different items and almost as many are carried by other types of retail outlets. Increasing discrimination among consumers has forced dealers to increase the varie-

ties of products carried in stock to the point where, obviously, they cannot all receive equal promotion.

Such competitive conditions have altered the view-point of the manufacturer. Getting his goods into the store is only the beginning, for success and profits today are measured in terms of getting those goods into the hands of the ultimate consumers. Selling the consumer is not the responsibility of the dealer alone; it is one which must be shared by the manufacturer as well. With thousands of items competing for the dealer's attention, with varying margins of profit to switch his loyalty, the self-interests of the manufacturer dictate that he shall lend a definite helping hand in the retail store. Only by so doing can he make certain that his products will receive the favorable attention which they must be given to be profitable.

It is at this point, and to perform this job of information and persuasion, that the store display serves so usefully and effectively. Properly designed, the display brings the product within the range of the consumer's vision, explains and demonstrates what it will do and why it deserves consideration.

Of the many types of materials used in the manufacture of merchandising displays and similar products, sheet metal stock is one of the most popular. Cheapness, strength combined with little weight, pleasing appearance, durability and ease of fabrication are some of its qualities, while one of the most important is the ease and economy in coating and decorating by lithography. Displays made from tin plate or similar sheet metal stock are economical to build, need little bracing as they have sufficient strength and rigidity unto themselves and in large quantities are not only inexpensive, but may be used over long periods.

While those basic essentials for a good store display—correctness of size, focusing of attention on the product, self-service, storage features and simplicity of design—hold true, regardless of what material is used in the construction of the display, those made of metal offer these additional features:

1. Many types of displays are designed with the complete expectancy that they will be used for only a brief period and then discarded. Metal displays on the other hand offer strength, rigidity and a permanency of finish, unaffected by time, which encourages their use over much longer periods.

2. Inasmuch as the dealer uses metal store and display fixtures as part of his permanent equipment,

he recognizes their superior qualities. In the displays that are sent to him by manufacturers, he feels that those made of metal fit in with the other fixtures he has, make for an improved appearance in his store interior and may be used with entire freedom from worry as to tipping over and damaging goods.

3. Metal combined with other materials offers an unlimited range of possibilities for new and different display ideas. Many times it is advisable to provide a storage cabinet with the display and this can be better built of metal.

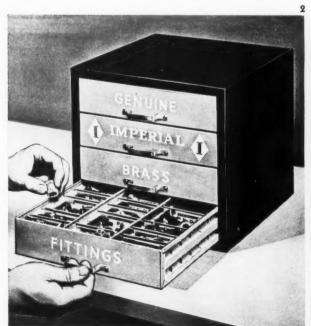
4. Combining the beautiful reproductions, obtainable by modern lithography, with the use of newly created or currently popular materials, such as chrome and other plate finishes, makes it possible to obtain results commensurate with the most attractive modern surroundings.

In considering the construction of metal displays, it is well to understand that there are basic differences between this type of manufacture and that of other metal products. It is by far a more specialized and less mechanical business. Each particular display is a distinct production job requiring the working out of special designs and the planning of production operations.

Combining other popular materials, such as chrome, gold bond and plated finishes, with lithographed or silk screen processed reproductions, often enhances the attractiveness of a metal display piece, making it acceptable under the most critical circumstances. Other materials utilized extensively are glass, mirrors, wood, rubber, castings, plastics, fabrics and electrical equipment.

The various types of displays may range from step-up

This compact and convenient counter cabinet of metal holds heavy stocks, makes for easy selection, affords
display of seldom seen articles. Photo Advertising Metal Display Co. 3. This display stand of metal is a
stock item for heavy merchandise in the automotive field. Photo Lyon Metal Products, Inc.





PACKAGING CATALOG

or pyramided to round or rectangular and may have incorporated in them self-serving, dispensing or dealerhelp features. The latter may consist of gum tape holders, string cutters, coin and stamp trays or even compartments to hold other merchandise. Displays may be made rotating or stationary. A popular style of display is the overhead arch which not only attracts attention, but suggests a department in itself. In planning a display, the relative flimsiness of light gauge metal may be overcome by such means as rolling or beading the edges,

DAUER & BLACK

BLUE JAY

PROPUETS

FOR COMMENT and Celler

COMMENT AND CELLES FRANCES

embossing or depressing surfaces or rounding the corners.

By far the largest number of metal displays produced have lithographed copy. There are several processes, however, by which metal may be decorated.

Press Printing and Gum Printing: These processes are similar and are done on the flat sheet after the base coating of the metal has been applied. The printing is done directly on the base coating. Both processes of decorating are used extensively in the manufacture of metal signs where fineness of detail is not so essential.

Silk Screen Stencil: The base coating is applied in the same manner as in the preceding processes, while the design is applied by forcing stencil paste through a silk screen. Through the use of photo-process methods of producing silk screens, halftone reproductions can be made of almost any subject.

Where size limitations make lithography impossible, or small quantities (up to a thousand or so) of displays or signs are required, the silk screen method of printing is both practical and economical.

Lithographing: This is produced by very much the same method as is used in gum printing. The difference lies in the method employed in transferring the paints or inks in making the lettering or designs. Lithographing is also done on the flat, full-size sheet and ranges from the simplest effects in one-color coatings to the reproduction of the most intricate designs.

4. On the counter this metal display piece serves a double purpose—it reminds the customer of needs, and holds the retailer's stock. 5. Dispensing display equipped with thermometer and humidity guides to draw attention; refilled through a withdrawable rear compartment. 6. Drug fountain back bar display equipped with electrical outlets for soup heating cups and holding 5 doz. 7½-oz. tins on a 27 in. by 8 in. counter area has been an extremely popular item. Photos Advertising Metal Display Co.





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Modern wire display stands

by Carlton E. Sweetland

LONG with development in packaging has been the development of wire as a display medium of ranking importance. When experienced designers and artists started devoting their talents to wire, there was a change from the old conception of "racks or stands" to the new classification "point-of-sale merchandisers." There are still many "racks" being used today, but the trend toward attractive, modern wire displays is increasing.

These modern wire creations fill a definite need in the sales program. Most manufacturers do not consider them competitive to most point-of-purchase "advertising displays." They are rather actual merchandisers, usually carrying a sizable stock of the product. The "advertising display" tells you what to buy. The modern wire merchandiser, says, "Here it is—look at it, examine it—buy it." Once the prospect has the actual product in his hand, you are well on the road to the sale.

There are various reasons why modern wire display stands are successful in building sales:

1) Maximum product visibility, providing faster product recognition, and allowing the modern package

to show up to best advantage and to sell itself.

 More sales are made because the shopper does not have time to change his mind between the time when he thinks of your product and when he can examine it

3) In step with the times, modern steel store fixtures are popular, so modern wire display creations are especially welcomed by dealers

4) Increase dealer's storage space—out where the product can be seen, giving the extra advantage of mass display

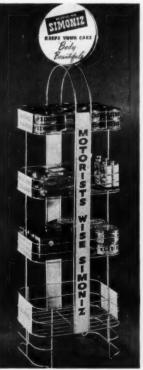
5) Stock checking is easier, so there is less chance for the dealer to be out of your product, or out of any size or color

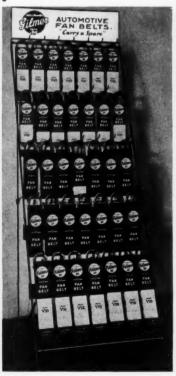
6) "Permanent" type displays such as wire creations win preferred position, and hold it a long time.

Modern wire displays can be classed in the category of permanent fixtures. The dealer can set them up as a permanent part of his store equipment. He welcomes this type of merchandiser because it affords additional stock space. If these displays were not made available to him, the dealer would have to purchase stock fixtures to be used for the same purpose.

1. Packaged dog food arrayed in a folding display. 2. Display of associated items to be used indoors or outdoors, preferably at the gasoline pump island of oil station. 3. Easel type fan belt display. 4. Oil display for use in service stations.

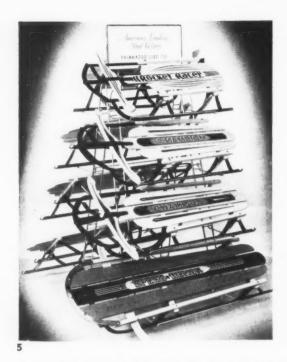


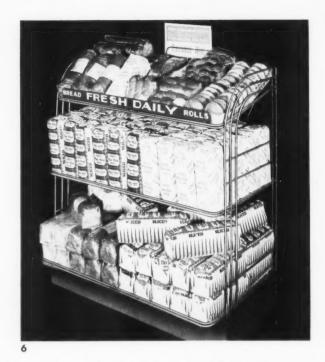






PACKAGING CATALOG





5. The Kalamazoo Sled Co. uses this display which holds four sleds on each side. Three or four different size sleds may be shown at the same time. Because they are definitely seasonal merchandise, the company had a display unit made that could be used throughout the year by the hardware or other dealer for many different items. 6. Combination of wire and sheet metal, collapsible display for bakery products. All photos Union Steel Products Co.

Wire displays are suitable for anything from delicate feminine articles to heavy automobile parts. Wire can be designed into a display that in itself looks dainty and feminine—or masculine and sturdy. No product for retail distribution, with few exceptions, is beyond the scope of wire displays. Many products have suffered because displays collapsed while in use, through weakness of material or construction, or an accidental jarring of the floor or counter. Wire displays, whether large or small, are always rigid and strong, eliminating the possibility of damage to the articles being displayed.

A wire display permits full vision of the products displayed. This point ties in with the modern trend in packaging design. Why use an eye-catching package design and "hide" it in a display that does not permit full visibility? The dealer prefers wire displays because they do not create solid blind spots between him and the customers. Likewise a wire display, being more or less of a meshwork nature, has no blind corners to collect dust and dirt, and therefore create more work for the dealer in keeping his wares and equipment clean and attractive. This is a vital point to the dealer, especially in a large and well-stocked establishment.

Another feature of wire displays is the ease with which a dealer can set them up. No tools or mechanical knowledge are necessary. Seldom are bolts or screws used, but instead slips, eyed hinges and other devices are used. As a general rule they are all assembled into one unit in manufacture so there is no danger of a display being thrown away because of a lost part.

Wire in itself can make a very attractive display but

in combination with wood, plastic, chrome sheet, hard board materials or painted metal sheet, it becomes an ultra smart display. Many times a wire display has been so designed as to include changeable cardboard signs. This permits the display to be seasonal in nature and at the same time to remain strong and serviceable without losing its place in the store.

The same features of merchandising and lasting qualities of construction that recommend wire displays for use within the store make them ideal for outside use. Finishes are available that withstand all kinds of weather.

Many finishes are available for wire displays. The appeal of color and warmth of feeling is achieved by using paint, enamel or lacquer. Plated finishes, which are more durable, scuff-proof, scratch-proof and fade-proof, include bright nickel, udylite and chromium. Tinned or galvanized finishes are used frequently and prove to be long-lasting. Some of the leading companies have developed a tinned finish to a degree closely simulating nickel or chrome.

Signs and advertising messages for wire displays are usually made of sheet metal, either lithographed or silk screen processed, or they may be made of formed wire letters. Lettering formed of wire gives an unusual, modern effect. Some of the more expensive displays utilize plastic signs to good effect. Cardboard signs offer many possibilities.

The use of wire makes it easier to produce a folding or collapsible display. It is also possible in most cases to form the display in one unit. The collapsible feature is a decided advantage in storage and shipping.

AMERICA'S FOREMOST ADVERTISERS

CHOOSE DISPLAYS OF CHARACTER

вч" U-S" у



Luckies are milder, better-tasting! _they pay the price to get the finer, lighter, naturally milder tobaccos.

WITH MEN WHO KNOW TOBACCO BEST __ IT'S LUCKIES 2 TO I



There is no more accurate indication of any company's position in its field than the

It is significant, therefore, that "U-S" serves so many prominent advertisers. These exacting buyers know that here at "U-S" real pride of craftsmanship combined with skill and abundant experience . . . plus unexcelled facilities . . . produce display material representing the highest expression of the lithographic art.

character of its customers.



THE UNITED STATES PRINTING & LITHOGRAPH COMPANY and DIVISIONS

Home Office — 313 Beech St., Cincinnati, Ohio

Plants at BALTIMORE . BROOKLYN . CINCINNATI . ERIE, PA. . ST. CHARLES, ILL. Sales Offices in Principal Marketing Centers

Plastic displays and fixtures

LASTICS have achieved wide usage in the fabrication of displays because of the unique combination of qualities which they afford. The increasing number of plastic materials available for display purposes and improved methods of plastic fabrication have continued to open opportunities in this field which display users have been quick to explore and exploit. For more or less elaborate displays which are produced in small quantities—as few as a dozen or two—the machinable plastics, such as the cast resins and the methacrylates, are well adapted. When substantial quantities are required, the molded materials, including ureas, phenolics, methacrylates and

polystyrenes, offer design possibilities and production economies which make them particularly attractive. Whether displays are machined—cut, drilled, or polished—or fabricated on molding presses, they provide the user with a permanent fixture which is colorful, attractive, sturdy, and capable of intricacies of design not readily available in other materials.

Because plastic displays do not readily show wear—since color runs all the way through the material—they have achieved widest adaptation for counter merchandisers, change makers, and similar purposes where the unit comes into constant contact with the consumer's hands.

1. Glove and jewelry displayer carved of methyl methacrylate. Lighted, this display serves as a lamp with the light carrying over the entire area. 2. Cast phenolics of crystalline quality impart jewel-like aspect to packages as well as to display. 3. Silverware display with black molded base and drawn rigid cellulose cover. Acrylic resin brackets hold the silverware in place. 4. These figures of clear acrylic resin, provide novel displays for department store use.







5. Sectionalized cosmetic tray molded in one piece of phenolics. 6. This molded cellulose acetate butyrate case is not only a display but a re-use package. 7. Molded of cellulose acetate in blue, green, orchid, ivory or pink, combined with a black base, this perfume box emulates a miniature radio. Brand name is stamped on the cover.

The high finish and long life of plastic materials have suited them also for use on display signs of all types and particularly for wall fixtures, back-bar displays and similar uses. In such cases, a plastic display can be set up and, except for an occasional dusting, will require no further attention through many years of use.

The translucent and transparent plastics are frequently used in conjunction with light mechanisms and a number of very ingenious effects have been achieved in this field.

All plastics lend themselves to lettering. Sheet materials, such as the cast resins or the laminated ureas or phenolics, can be jigsawed into letters and designs.

Pyroxylin materials are frequently die-cut into letters or other figures and molded to achieve relief effects. The molded materials can achieve lettering in a number of ways with raised or incised characters, with metal inlays or with roll leaf process printing in gold and silver. Incised letters can be colored to contrast with the molded material by the wiping-in of paints or pigments. Decalcomanias and transparent labels are also sometimes used to apply lettered identifications to plastics.

Design of plastic displays is limited only by the ingeniousness of the designer and by his knowledge of plastic materials and plastic production processes. While it may be taken as a general rule that plastics are best suited to the small and medium sized unit, some displays of fairly large dimensions have been successfully manufactured at reasonable cost. When plastic molding is utilized, it is possible, in a single operation, to fabricate a complete unit including parts and compartments which—in any other material—would require a number of fabricating processes.

For the advertiser inexperienced in the use of plastics, the best procedure to follow is that outlined in the sections of this Catalog dealing with plastic packages. While the basic design must, of course, stem from the advertiser's merchandising needs, he will find it profitable, at an early stage in development of design, to consult with and take the advice of a plastic molder or fabricator and the plastic material suppliers. By so doing, he may find it possible to make slight changes in the basic design which will vastly simplify production processes.

Cost is, of course, always an important consideration, for display design and plastic materials are not among the least expensive. However, the economies of quantity production by plastic molding processes frequently result in a lower unit cost over a quantity run as compared with any other suitable material which must be fabricated by a more laborious process. Thus, despite relatively high material cost, the end cost in plastics is frequently the lowest.



PACKAGING CATALOG

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HEWITT D

HEWITT 3 DIMENSIONAL MOLDED

Dis-Pla-Plaks*

Point-of-sale Displays

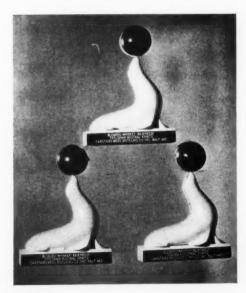
Your display will stay up, where others are thrown out if it's a Hewitt Dis-Pla-Plak

- Super Clean
- Steel-cut Appearance





STICKY-BACK MINIATURE PLAKS



 $2\frac{1}{2}$ "x5" overall, relief not to exceed $\frac{1}{2}$ "

Takes advantage of the least competitive spot in the store, the back bar mirror.

Uses the least amount of space. Attracts most amount of attention.

Easily Applied—Easily Removed Attractive Designs—Brilliant Colors

INVESTIGATE NOW

WRITE TO

* Reg. U. S. Pat. Off.

PRODUCED BY BRANSBY & HEWITT, Inc. 521 WEST 23rd STREET

EXCLUSIVE SALES REPRESENTATIVE FLANNERY ASSOCIATES GRAYBAR BUILDING

NEW YORK

PACKAGING CATALOG

Displays of rigid plastic sheeting





MPROVEMENT of manufacturing technique has added greatly to the versatility of rigid plastics sheeting for merchandising displays. Originally, many of these displays were also containers. The rigidity of the plastic and various types of construction made it extremely difficult to draw a exact line between the two classes of use. In 1941, fabricated, and drawn plastic display units entered a much broader field of use in which there are three basic classifications.

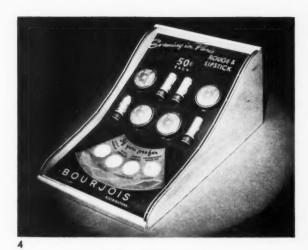
Dispenser displays: Combining the function of a merchandise container and display piece, dispensers have been most widely used in the confectionery field. Many are merely adaptations of accepted packages adequately strengthened to permit their functioning as displays, and with additional attention-getting devices, such as cardboard pop-up backs or contrasting color trim.

Used for candies, gum and other confections ranging in retail price from one to ten cents, the display packages are designed for a prominent spot on the retail counter, preferably near the cash register where they can stimulate impulse sales. Products other than candies which

1. Plastic package and display for towels; doubles as a knitting box for re-use later. Photo Hercules Powder Co. 2. An acetate sheet drawn to a curve forms the protective hood for this leather merchandiser. Photo Plastics Div. Monsanto Chemical Co. 3. This display has a wood foundation and a rigid plastic sheeting cover which eliminates all dust and dirt. Photo Celanese Celluloid Corp.



PACKAGING CATALOG



have successfully used this type include automobile fuses, golf balls, packaged aspirin, shoe laces, pretzels and sanitary belts.

Units of this type normally are shipped in a corrugated carton reinforced with a chipboard sleeve which may carry the instructions for correct assembly and set-up of the display. Some dispensers are designed and constructed as permanent displays to be refilled. Frequently however, merchandise such as confectionery is shipped in the package dispenser which may be discarded when empty or which may be utilized for dispensing other things, for example, matches.

Product displays: More pretentious in nature, rigid product displays are widely used for merchandise for which point-of-sale display is desirable but which also need protection from soiling or pilfering. The cosmetics and perfume industry has made especially effective use of this type as a counter unit, which sometimes shows the entire line of a certain company's cosmetics products.

In many instances, these display cases follow the principles of construction previously established for display cases with glass fronts. In these, the rigid transparent plastic has replaced the glass. Its advantages are less breakage in shipping and considerably less weight, while retaining full protection and visibility. The adaptability of the plastic to surfaces with compound curvatures has broadened the scope of design in permanent displays of this class. The concave curved fronts of some cases have successfully killed the highlights and reflections which are so objectionable in flat glass installations.

A recent trend, made possible by the improvement of techniques for drawing and forming rigid transparent acetate plastic, has been in displays with metal or wood bases and convex domed transparent surfaces. Displays of this type, basically similar in character, have been used for products as diverse as wrist-watches and vitamin pills. Electrical illumination has been successfully incorporated into many of these units.

Textile products, where soiling of the merchandise on display is a major consideration, have also very successfully used rigid transparent display housings.

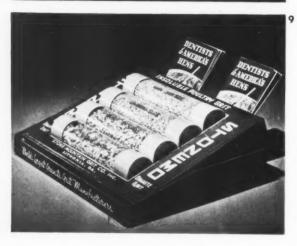




4. Cosmetic dispenser where the curved transparent top is made of rigid plastic sheeting fitted into the grooves of the top and bottom with side edges tacked to the cabinet a popular counter display in drugstores. Display by Arrow Mfg. Co. Photo Eastman Kodak Co. 5. Silverware display with paper base and rigid plastic sheeting cover exhibits product attractively in retail store and provides consumer with a permanent case. Display by Shaw Paper Box Co. Photo Plastic Div. Monsanto Chemical Co. 6. Shoe display with formed rigid plastic sheeting cover reveals every detail of style and workmanship. Photo P. P. Kellogg & Co. Div. U. S. Envelope Co.







Towels, lingerie, men's shirts, gloves, and similar products are typical examples of successful use of rigid transparent plastic counter displays. In most instances, the brand name and selling message are printed on the transparent surface. Some product displays have stock compartments in the rear; others dispense from the front.

Attention displays: Displays and devices in this

Attention displays: Displays and devices in this category use rigid transparent plastics to gain attention for a product or for the display of a trade name and pictorial rendition of the product. The distilling field has been especially alert to this trend, with a number of new displays introduced during 1941 for beers, wines and liquors. Notable is a process developed for printing up to seven colors on transparent acetate sheet plastic which can then be drawn or formed to such shapes as relief bottles, globes or trademark insignia without distortion of the printed decoration and legend. Most displays using this technique also incorporate electric illumination. These plastic displays are extremely light in weight and, compared with types using metals and glass, relatively inexpensive. Rigid transparent plastics also find many uses as display properties, an especially popular item being imitation giant ice cubes for the display of summer merchandise and for winter scenes. Simulated icicles have also been drawn and formed from plastic sheets.

The use of ribbons, bows and banners of transparent acetate sheeting for window display often with the advertising message silk-screened or lettered on the material, has also made very rapid strides. A leading manufacturer of men's summer suits used a 40 × 72 in. transparent poster in which a fine mesh cloth carrying a reproduction of the garment was laminated between two sheets of plastic to convey an idea of its coolness and comfort.

Construction techniques

Within reasonable limits, rigid transparent plastic display packages and fixtures can be built to meet any budget. In the least expensive versions, bases and supporting structures of chipboard and cardboard are used. In displays for mass production, cardboard and metal are commonly selected for frames, bases and supporting structures. From this point, investment in displays rises to cover assemblies of wood and molded or cast plastic, with or without electric illumination. Maximum economy is obtained by making use of established fabricating techniques and equipment. For further information regarding this material see Section on Rigid Plastic Sheeting, page 149.

7. Rigid plastic sheeting protects this heating pad from soiling either in stock or while on display. Photo P. P. Kellogg & Co. Div. U. S. Envelope Co. 8. Dispenser display with rigid plastic sheeting cover which keeps merchandise in permanently fresh condition and discourages pilfering. Photo Joseph Meyer Bros. 9. Display housing chicken grit in four cylinders formed of rigid plastic sheeting affords complete visibility for the products and makes for easy consumer selection. Photo Eastman Kodak Co.

Wood displays and cabinets

OOD counter merchandise displays occupy a rather unique position in the display world. They are so constructed as to be of permanent value. The manufacturer who furnishes them to his trade expects more than a temporary place on dealers' counters. He expects the dealer to use the display as a fairly permanent fixture. He knows that a counter display will move his merchandise from a hidden place on the shelves or inside the counter to a strategic at-the-point-of-sale position on top of the counter.

Wooden displays are showing a definite modern trend in design, not only in line, but in the use of decorative materials and eye-catching devices. Perhaps the most news-worthy trend is in the use of electrical illumination, particularly with fluorescent tubing which now comes in short lengths suitable for small displays.

Motion displays also are increasing in popularity. They may be eye-catchers or they can show the product in use. Some motion displays permit the customer to participate in their "action" by asking him to press a button which sets the display in motion. Such "stunt" displays are obviously only for counter use but other types can be used in windows as well.

For decorative effects, wood displays can be embellished with metal strips, rigid plastic sheeting, transparent or colored, leatherette or enamel. Their various elements can be printed by the silk screen process, enhanced by decalcomanias, and made generally attractive in numerous other ways. A primary advantage of wood displays is that they can be produced in small quantities without the expensive "first cost" of dies.

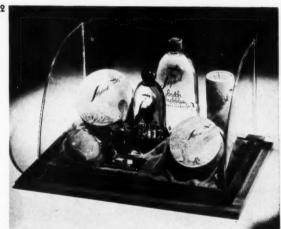
Displays of this kind are designed not only to hold merchandise, but to display and sell it as well. They are, in actual fact, "salesmen" from the manufacturer through the wholesaler, jobber and storekeeper to the ultimate consumer.

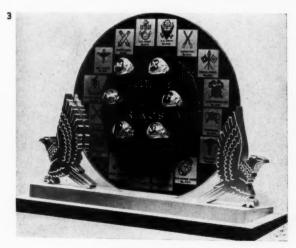
From the manufacturer's standpoint, wood displays give him an excellent means of introducing a new product or of redesigning and reintroducing an old one. Frequently, newly designed displays for old products have helped not only to 'close out' slow moving goods, but have actually caused new production to satisfy the greatly accelerated demand. Well-designed wood display units stimulate the sales force, and are an incentive for the dealer to display merchandise—they give you a 'section' of his counter.

From the jobber's standpoint, wood displays make it easy for his salesmen to introduce or promote a line.

Wood display of permanent value in showing merchandise.
 "Show case" of transparent plastic on wood base affords tamper-proof visibility.
 Not merely to hold merchandise but to display and sell it as well.







PACKAGING CATALOG

4. Permitting customers action, this cabinet compactly stores and displays merchandise. 5. On wood base and pedestal, actual product is given air of elegance at comparatively low cost. All photos Arrow Manufacturing Co.





Such units generally mean a larger volume of dollar sales per product or per line than can be made without the unit. Automatic stock control display units are easy for jobbers' salesmen to check—they are easy to refill with substantial re-orders.

From the store's standpoint, wood displays are compact. They concentrate attention. They eliminate costly selling effort. They are attractive—build prestige. Wood displays are practical. They do not show wear easily. They can be stored away, later cleaned and brought out for further use. Wood displays act as an automatic stock control by immediately indicating what items have been sold.

From the consumer's standpoint, wood displays tell their own sales story—customers need not wait to be shown goods. They make quick purchases possible without delays annoying to the customer.

In some cases, the display is sent out by the manufacturer to help move merchandise that the dealer has already purchased. In this latter case, there is no tieup with an assortment of merchandise. The display is sent gratis to the dealer, in order to help him sell the merchandise which he had previously purchased.

In other cases, the display is used to help introduce a new product. In these instances, the display is sent to the dealer irrespective of the amount of merchandise he buys, so as to insure a prominent position on the counter for the introduction of the manufacturer's new item.

In every case, wood counter merchandise displays are made up in a style and of materials such as the dealer himself would use were he ordering the display himself for his own store. Wood is usually combined with glass or mirrors, with chrome, brass or other types of ornamentations added for decorative purposes. Frequently provision is made for illumination either in the form of a steady burning electric light or a flasher bulb—either

provision making for increased sales effectiveness.

In every case, this type of display must be used only for the display of merchandise. It serves no function whatsoever when used by itself, being as its name implies primarily a merchandising unit. It forms a background or setting for the proper presentation of the product. Extra compartments for reserve stock are often provided. An additional advantage of this type of display is that it will remind the dealer to restock when the sale of an item leaves an empty space and makes the display, therefore, less attractive. This reminder forces the retailer to keep a closer check on his stock, thus compelling him to reorder more frequently.

It is interesting to note that displays that have a novelty appeal because of their seasonable tie-up, or displays that have moving parts which enable the consumer to play with the display, are of definite value in attracting the eye and holding the attention of the prospective customer. The same holds true of displays which enable the consumer to sample a product like powders or perfumes or displays which have a self-service feature.

It has been found that mirrors on wood displays of this type not only increase attractiveness to the display itself, but really draw the consumer, particularly the female, to the display for the obvious purpose of using the mirror. Once this line of attraction has been established, it is an easy sequence for the looker to become a buyer of the product displayed.

Since wood displays do not involve the use of any special dies, for obviously wood can be cut to almost any shape, there is great flexibility in the type of design that can be created.

The advertising message on a wood counter display must necessarily be very brief. Usually the name of the product itself with possibly a listing of the items and prices are all that can be used.

Motion and light mechanisms

by John G. Ruckelshaus

DVERTISING men for years have known that "anything that moves attracts attention," and the only reason for animating a display is to make more people stop and look.

Window displays that are animated are read by from 6 to 25 times more people than still displays. Animation has been known to increase sales as much as 500 per cent. This and other important facts are proved by tests and surveys conducted by leading advertisers. Most of these tests were made by setting up still displays in prominent locations and then checking the actual number of people who looked at them during a given period of time and then animating these same displays and rechecking the number of onlookers.

After analyzing these surveys and tests, it was found that the average comparative figure showed that 7 per cent of the people looked at a still display, whereas 42 per cent were attracted by animated displays.

A new method of distributing animated units has recently been placed at the disposal of the advertiser by which any portion of a run of lithography can be animated without the advertiser's purchasing or shipping animating units. Through the use of the simple easel attachment used, the display is assembled right at the dealer's store. Displays thus animated add comparatively little cost to the general campaign.

For instance, 10 per cent of a run of displays animated in this fashion adds 5 per cent to the cost of the entire display campaign and often increases the attention value of the campaign to as much as 50 per cent.

This method of handling animated displays is available through all reliable display builders and lithographers and eliminates the former method of handling, which included expensive assembly costs, high shipping costs and high installation costs.

This is accomplished by the lithographer's or mounter's shipping out all the cardboard displays, without the motion unit attached, flat and in bulk. That portion of the run that is to be animated merely has a special cardboard easel attached, and, therefore, costs no more to ship than ordinary still displays. The animating units are either shipped separately for use on the display especially designed for them, or are obtained from one of the 20 key points throughout the country that is nearest the point of assembly, and will require no expense on the advertiser's part. They are merely rented for the period required in these various trading areas.

Another feature of the modern animated display is that it requires neither the dealer's time nor electrical current to keep it going. The displays run for a period of two weeks, day and night, on one dry cell battery, without attention. There are cases, however, where animated displays are used for long periods of time and in most of these cases, plug-in displays are recommended.

Many forms of animating units are run on electrical current, such as small motors, pendulum power units, heat motors, flashing displays and battery units.

There are many questions that should be considered before using animation. In the past, even though animated displays have always attracted more attention than

A demonstrator type of display showing the back of a man's coat cut out so that the radial action of the suspenders can be demonstrated. Masonite is used as display material to give long life. Display by Displaywell Case Co.



PACKAGING CATALOG



A display idea incorporating a metal frame to which an animated unit has been attached. Four changes of copy can be made by merely sliding a new background and a new motion piece into the frame, and attaching the animating unit. Frame by Jawin Co. Silk screen by Chromart Co.

stills, they have presented many handicaps such as high cost of assembly at the window, high shipping costs, high packing costs, and also the problem of wondering whether or not the dealer, once having received the display, will be able to unpack it, set it up, and keep it running correctly.

Before using animation, two questions should be asked in order to determine type of animation to be used.

Question 1: When to use electrically operated displays?

Answer 1: Is the product an important item being sold by the dealers handling it? If so, a dealer who derives the major portion of his income from a product will want to keep the animated display for a comparatively long period. He will keep it plugged into his lighting circuit, and if he hasn't a convenient outlet

in the window, will run an extension cord to it. Displays that run direct from the lighting circuit may have the additional feature of synchronized lights, thereby giving more forceful spot messages.

Question 2: When to use a battery-operated display? **Answer 2:** Is the product one of many sold by the dealer, such as drugs, candy, cigarettes, food products, etc.? The dealer selling this type product is not as apt to see that the animated display is kept in operation, because his profits do not depend upon whether he sells your product or your competitor's and, in all probablity, he is impartial. This product should be advertised with a battery-operated animated display, which, once set in motion, will operate for a period of at least two weeks (24 hours a day if necessary without attention). Thus, the dealer attends to it no more than he does a still display.

Points to be considered

1) In designing a display for motion, always be sure that it is a good still; avoid depending on tricky moving parts to attract attention entirely, for this means that the passersby will be so intrigued with the tricky motion that they will fail to get the advertising message.

2) The addition of motion is only to attract more people to the display, and no matter how many look, the display itself must do the selling.

3) When your display is electrically operated and it depends upon the dealer to plug it in to keep it running, "sell" him thoroughly on the reason why you are giving him this display and how it will aid his sales.

4) Without dealer cooperation, a plug-in motion display will be worthless. This is not true in the case of battery-run units since the dealer is not required to make any contribution to keep the display running.

5) In designing animated displays use a reliable display builder as well as a reliable supply of motion units. Be doubly sure that both of these can cooperate.

6) Use animated displays of simple construction which will require little, if any, adjustment in the field; be sure that the motion is large and simple enough to attract attention without requiring work from dealer or service from advertiser to keep it in operation.

This flasher light display proves the advantage of illumination in display. The name, Wilcolator Oven Control, and the arrows flash on periodically. Photogelatine by Fredericks Photogelatine Press. Flashers by C. D. Wood Electric Co. Animation for the displays pictured by Ruckelshaus and Co., Inc.





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Printed and lithographed labels

ROBABLY first among packaging materials to appear was the label. Certain it is that labels are among the most universally used of packaging materials. It has been estimated that in the food field alone more than 18,000,000,000 printed or lithographed labels, wrappers, etc., are used annually. This figure comprises all labels used on cans and bottles, labels and wrappers for wooden containers, cardboard boxes, etc.

Functions of labels

The terms *label* and *labeling* have been enormously extended in meaning by the definitions in the Federal Food, Drug, and Cosmetic Law. This law, together with the interpretations and regulations that have grown out of it, deals very definitely with certain details that labels must carry (see Section on *Packaging Law*). The majority of products that use labels come under this law, and fortunately for producers, this piece of legislation, fully recognizing the benefits of fair competition, places no restriction on any of the elements of design that give products individuality and sales appeal, such as:

1) Brand name displayed as desired on label

- 2) Pictorials for illustrative purposes
- 3) Recipes and directions
- 4) Statements of quantity in terms of cupfuls, number of servings, etc. (though this statement must also appear in the required manner)
- Use of foreign languages (though English must also be used)
- 6) Color and design

In short the door is wide open, permitting the producer to individualize his labels, subject only to two very important principles:

1. Nothing on the label should prevent the required details from being "prominently placed on the label with such conspicuousness . . . as to render them likely to be read and understood by ordinary individuals under customary conditions of purchase and use."

2. No representation of any kind put on labels may in any way be misleading or deceptive. (It is well to remember that the pictorials used are "representations" under the law.)

Labels ordinarily do not perform a protective function, though in some cases protective materials may function,

Though obliged by the Food, Drug and Cosmetic Law to comply with rigid regulations governing the method of presenting definite facts, labels for canned foods may nevertheless show originality and individuality in design, color, illustration and form of presenting information. Photo U. S. Printing & Lithograph Co.



PACKAGING CATALOG

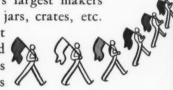
388

Stecher-Traung Quality in your package is more important than ever!

With prices of commodities rising and the demand for better quality goods on the up, now more than ever your packaging material needs the finest quality appearance you can get. It must reflect the extra cost of the contents. It must sell the higher-priced and higherquality merchandise! And that is where Stecher-Traung quality counts!

The illustration below shows a few of the thousands of label and package jobs produced by Stecher-Traung - the world's largest makers of labels for cans, bottles, jars, crates, etc.

-and one of the world's largest makers of box wraps and cartons. For over 75 years this great American institution has







been a most reliable source of supply through the stormy as well as the smooth-sailing periods of this extremely essential industry.

Stecher-Traung's FULL Color "Gang Run" method of producing labels and packaging material, to give you the finest quality lithography in small quantities at economical prices, is now extended to include all kinds of sales and advertising material you use and practically any job you may have. The savings resulting from our "Gang Run" method, which combines many jobs of the same type on one large sheet, mean we can give you—

FULL COLOR at 2-Color Cost!

Yes, we can produce your Labels, Cartons, Box Wraps, Consumer Folders, Recipe Books, Circulars, Booklets, Broadsides, Streamers, Displays and other advertising material in sales-boosting FULL Color for as little as you usually pay for only 2 colors. And this holds true even in small quantities of 25,000 minimum.

Stecher-Traung's large, modern plants in Rochester, N. Y. and San Francisco, Calif. are equipped to handle your jobs from layout, art work and photography to the finished material—saving you time, effort and money.

We have offices in leading cities and fifty representatives ready to serve you no matter where you are located. Ask for samples of our work and quotations on your jobs. And be sure to get a copy of our new 36-page Book telling the complete story of our service and giving valuable information for you and your organization.

Mail Coupon for Free Book

STECHER-TRAUNG LITHOGRAPH CORPORATION, Department 1401 274 North Goodman St., Rochester, N. Y. 400 Bettery St., San Francisco, Calif.

Please send a copy of your new 36-page, Illustrated, Full Color Book on "How to Step Up Your Advertising Material and Save Money"—free of charge and without obligation.

Name Title

Address

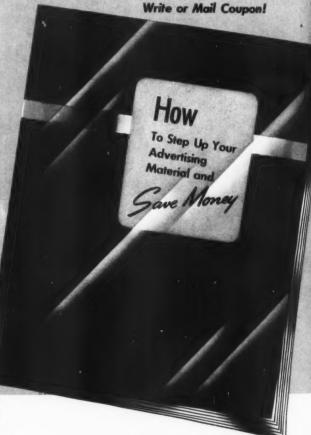
State



This 36-page book gives you a wealth of information on all Stecher-Traung products and valuable information for preparing FULL Color advertising and sales material.

- Gives details on Label, Carton and Box Wrap production.
- Tells about our new money-saving Lamiphane Super Gloss Finish.
- Contains Color Charts and tells how to use FULL Color easily.
- Shows how to make Folder Layouts and gives 20 popular Styles and Sizes.
- Explains our complete service and how you can save money on the finest lithography.

Yours Free—
Write or Mail Coupon



STECHER-TRAUNG LITHOGRAPH CORPORATION

ROCHESTER, N. Y.

SAN FRANCISCO, CALIF.

BALTIMORE BOSTON CHICAGO CLEVELAND COLUMBUS DETROIT HARLINGEN HARTFORD HOUSTON LOS ANGELES MACON NEW YORK
OAKLAND
PORTLAND, ORE.
SACRAMENTO
ST. LOUIS
SEATTLE



Labels for fibre cans are often applied singly as on tin cans, though sometimes a complete sheet of labels is applied to a full length of fibre tubing, which is then cut to proper lengths and fitted with tin ends. Surface affords excellent space for pictorials, directions, information, etc. Photo U. S. Printing & Lithograph Co.



as labeling because they carry graphic matter. The principle functions of the label are:

- 1) To identify a product
- 2) To identify the producer
- To perform such merchandising functions as window display and reminder appeal
- 4) To convey information to the consumer about raw materials or processing, uses and applications, or other products in the same line.

Grade labeling

For canned foods, grade labeling has been advocated by various consumer groups and governmental agencies; and it has actually been adopted, at least for test purposes, by certain retail chain organizations. Some pressure groups had hoped to include provisions for grade labeling in the Federal Food, Drug, and Cosmetic Law, but when the Act was finally passed this point was left open. The National Canners Association and the National Association of Wholesale Grocers are advocating a system of descriptive labeling for canned foods as a substitute measure for the ABC grading. Neither plan has yet been made mandatory by law, and the movement for informative labeling is progressing but slowly. So far the labels on woolen products only are required by law to carry certain information.

While the Federal Food, Drug, and Cosmetic Law is very specific in its requirements, it cannot be assumed that labels, even if they fully comply with that law, are necessarily informative labels. For instance, "standards of identity" in accordance with the law have been estab-

lished for practically all the common fruits and vegetables, which means that these names may be used without the statement of ingredients, provided that the product answers to the required standard of identity. Probably not one consumer in 5,000 ever sees these standards of identity, so most of these products must be taken on faith. While the consumer organizations still have the job of carrying on their educational programs, forward-looking manufacturers are not waiting for legal compulsion, but are using label space to give the consumer full information about their products. (See section on Informative Labeling.)

Preparation and planning

When it comes to labels the principles of design attain highly specialized forms. The wise packager, therefore, pays particular attention to both design and specifications. If he employs an independent designer, he will coordinate that designer's efforts with those of his label producer, and both will consider the mechanical handling of the product and its labeling, as well as the merchandising responsibilities of the label. The former involves such questions as paper gauge and stiffness, direction of grain, placing of glue lap, location of varnish or lacquer. Neglect of these important points in planning a label may later cause plenty of trouble in the production department and lead to spoilage and waste that could have been avoided. Sometimes a trifling increase in the price, paid to an experienced, reputable manufacturer of labels will prove to be the most economical in the long run. Specifications should be drawn up with

PACKAGING CATALOG



Outside wraps, applied by various methods to chipboard cartons, help protect cereals, flour, etc., from moisture, infestation, temperature changes. Large label surface permits use of various merchandising features. Photo U. S. Printing&LithographCo.

the utmost accuracy. If competitive bids are obtained, all bidders should have clear and identical understanding of the specifications.

Manufacturers commonly produce labels either as print alone orders or in club runs. For the former, individualized colors and special shades are obtainable, for the latter, standard combinations of colors are used, which necessarily impose certain limitations, but offer considerable economy in cost. However, the scale of color combinations provides such a wide range of possibilities in "produced" colors that unless the runs are very large and the color requirements exceedingly unusual, it is better to take advantage of the more economical club runs. In these, many different labels are run on the same sheet, to be cut apart later. This necessitates a little longer time allowance for delivery.

Types of labels

The chief function of the label being identification, the controlling element as to its size and shape is the nature of the container to which it is applied. Principal among these are:

1. Tin cans: The most widely used package for canned fruits and vegetables. Visibility of product is obviously not possible, therefore, the label has its finest opportunity for attractive presentation of brand name, identity of product and information for the consumer. Manufacturers specializing in labels for canned foods are equipped to offer a wide selection of illustrations of products commonly called vignettes. The use of direct color photography for these vignettes and for illustrating recipes has produced some labels for canned foods which exemplify a very high order of commercial design.

- 2. Fibre cans: Another type of container that permits no visibility of contents. Labels are applied either individually to the cans or in sheets to full lengths of fibre tubing, which is then cut into individual packages. Suppliers of labels and fibre cans should coordinate their activities. Like tin cans, fibre cans afford opportunity for attractive labels.
- 3. **Set-up boxes:** Confectionery, hosiery, toys, cosmetics, etc., are packaged in set-up boxes with large areas which can be devoted to colorful design. These outer wraps (a form of label) are delivered from the label factory and then applied by the manufacturer of the boxes.
- 4. "Tight-wrap" packages: For uncooked cereals, cake flour, etc., which require unusual protection. This is effected by an outer label tight-wrapped around a chipboard carton and sealed by the tight pasting of the label itself.
- 5. Glass container: Clear or colored glass permits maximum visibility. Labels function here both as ornamentation and as identification, offering excellent possibility in color and design that harmonize with color of product and container. The variety of shapes obtainable also permits the use of special die-cut embossed effects, labels on front and back, neck, etc.
- 6. Case labels: Wooden or fibre cases such as crates for fruits and vegetables offer opportunity to use large-sized labels of great sales power and attractiveness. These are usually placed on the ends of the cases, permitting retailers to make maximum use of their colorful pictorials.
- 7. Box end labels: Used as a seal for the package, such as wrapped bakery products; or for identification, as

on boxes of shoes, hosiery, etc., to indicate contents, style, size, etc. In either case, identity of product and trade mark are usually the only additional features that such labels could carry.

8. Shipping labels: Tags and stickers of all classifications are included here. Their main function is to carry the names of sender and receiver, but they also afford opportunity for trade marks, slogans, advertising messages, instructions for handling, notices about inspection, and the like.

Methods of manufacture

The two principal methods of producing labels are letterpress and offset lithography. Each method has its enthusiastic proponents, but the average layman finds it difficult to distinguish between the results. Both require similar original art work.

Printed: The printed label requires electrotypes cast from the original engravings and, on the press, the ink is applied to the electrotypes from rollers and then transferred to the paper by direct contact. This method permits a greater flow of ink and is especially advantageous on solid backgrounds.

Lithographed: The lithographed label requires zinc or aluminum press plates to reproduce the original art work. In process, the ink passes from the rollers to the press plate, then to a rubber blanket, and is finally transferred from this to the paper by direct contact. This method is especially adaptable to labels carrying illustrations in half tone or from exceptionally fine screen.

Any label can be reproduced by either method and the final choice must depend on factors that are different in every case. Given two copies of the same label, one lithographed and the other printed, the average person cannot distinguish between them.

Label materials

Machine finish or book paper: An uncoated sheet generally used for inexpensive labels that do not require a finish such as gloss overprint or spirit varnish. This type of paper works best on labeling machines, because of its softness and flexibility.

Super paper: A highly calendered book paper with and without a finish, such as gloss overprint or varnish and is relatively inexpensive as compared with coated paper.

Coated paper: Used on the more expensive labels, with or without gold or aluminum bronze, varnish, lacquer or embossing. Even without varnish, the inks are more brilliant, as the coating prevents the absorption of the ink by the paper, thus enabling the ink to dry on the surface and present a glossier appearance.

Metallic and foil papers: Used most frequently on cosmetics, condiments and carbonated water. They are relatively more expensive than other papers, but in return present a brilliant, appealing, and very attractive appearance.

Transparent paper: Such as glassine and cellulose, is used where transparency or semi-transparency is





Above: Consumers have more or less permanent use for the set-up boxes in which some products come; therefore, the outer wrap, applied "tight wrap" or "loose wrap" to the shell, takes full advantage of large area for colorful appeal. Below: Labels for soaps, candy, tobacco, etc., are outer identification over inner protective wrap of glassine, foil or waxed paper. Photo U. S. Printing & Lithograph Co.

desired. It often has an added advantage of being moisture-proof.

Inks: Inks of innumerable colors are made with various qualities to suit a particular need; for instance, they can be made sun-resisting, alkali-proof, scratch-proof, alcohol-proof, and odorless. The uses for inks having any one or more of the above qualifications are obvious. Perfumed inks are available for packagers that wish to add this extreme note of appeal.

Finishes: In the last decade there has been an increasing demand for labels with a high gloss finish. There are many materials on the market which can be applied to the surface of the printed or lithographed label to give this effect. One quality makes the common denominator for all finishes—a shiny effect to bring out the brilliance of the inks and also prevent the soiling of the label. (See special sections on these subjects.)

Gloss over-print or spot varnish: This is applied by press, the same as color; the entire surface can be varnished, or any portion or portions, no matter how irregular, can be left unvarnished. It gives a fairly high finish and is relatively flexible. Although it is not moisture-proof, it is slightly moisture-resistant. It acts as a bond for the inks on the label and effectively prevents scratching.

Spirit varnish: This is applied by a regular varnishing machine which requires the sheets to pass through a heated box. It has a considerably higher finish than gloss overprint.

Lacquer: Lacquer produces a high gloss finish and can be used on almost any type of label. Different kinds of lacquer are manufactured for special properties,

such as moisture-proof, heat-sealing, and scratch-proof.

A relatively new finish on the market is a rubber derivative, which shows approximately the same characteristics as lacquer and is especially adaptable to packages that must be moisture-proof, scuff-proof and scratch-proof.

Stock labels

There are two broad classifications of stock labels:

1. Convenience labels: These labels are only adjuncts to packaging proper. In this group are shipping labels, address labels, and stickers to indicate the character of the contents or to insure safe handling in shipment, such as "Fragile," "This Side Up," "Glass," "Poison," etc.

Similar enough in character to be placed in the same classification are the special seasonal stickers by means of which the all-year package may be dressed up like a gift or given a holiday personality, by way of special Christmas seals, Mother's Day or Easter stickers.

2. Product labels: These are more particularly the concern of packaging proper, and they raise the question of the stock label as compared with the individually designed label.

Judged by the number of years they have been in use, it might be considered that stock labels are not in line with *modern* packaging. Judged by utility and extent of use, however, they certainly are.

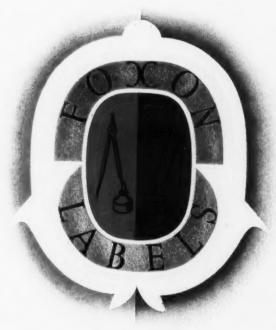
Stock labels go back many years before the era of packaged merchandise. Old records of label manufacturers show samples of stock labels which sold in quantities as small as one hundred. In reality, the stock label blazed the trail for modern packaging.

Labels of varying shapes, sometimes die-cut, are used for the unusual panels or surfaces of bottles, jars and similar containers. Pebbled surfaces, embossing, variety of color are evident in label designs which harmonize with colors of visible product and its container. Photo Fleming-Potter Co., Inc.



PACKAGING CATALOG





THE FOXON COMPANY



CREATORS OF FINE EMBOSSED LABELS
TAGS, WRAPS AND DISPLAYS
FOR OVER TWENTY FIVE YEARS

242 W. PARK ST. PROVEDENCE ARROW TOTAL





Applied to ends of corrugated or wooden shipping cases for fresh fruits, vegetables, or large-sized cans, case labels seize an opportunity to advertise products in transit. Photo U. S. Printing & Lithograph Co.

Today, the stock label fills a real need. There are three important reasons for the use of it:

- 1) The quantity may be too small to warrant a private design
- 2) There may be a need for a rush delivery
- It may be desirable to pack some of the goods under a label different from that on the regular stock.

Label producers recognize this need and many of them are prepared to supply the demand. Some of them go in heavily for stock labels, but it must be admitted that others are rather luke-warm. This is not, however, a churlish attitude of disservice. Rather, the label printer or lithographer who takes that attitude is, in reality, helping to convince his customers of the importance of character and individuality in packaging, thus genuinely furthering their interests.

This does not mean that good designs are unobtainable. There are plenty of them and they are available for products of many kinds. But, as a general rule, the private design outranks the stock design in attractiveness, sales power and in obtaining consumer interest.

Stock labels are a god-send to the small producer, because they are sold in lots as small as 1,000. Frequently the entire transaction is conducted by mail. Samples or catalogs and price lists are sent on request, the customer makes his choice, prepares his copy for imprinting and sends in his order. Deliveries can be made promptly.

Prices depend, of course, on size of labels, number of colors used, die-cuts, embossing, etc. Compared with private designs produced in large quantities, the prices are relatively higher, but it must be remembered that stock labels are sold in small lots as a rule. If the purchaser had to pay all costs of art work and plates on the small quantity he uses, the prices would be prohibitive and he would doubtless be denied the use of a colorful label. By means of the stock label, he may obtain a good looking package for a small investment.

Obviously, the user of the stock label cannot be assured of individuality in design, though houses specializing in stock labels have been known to parcel out their various designs on what almost amounts to a territorial franchise basis thus assuring a certain exclusiveness.

PACKAGING CATALOG

Informative labeling

by Roger Wolcott

LABEL should help to sell merchandise. This fact has been recognized by manufacturers and retailers ever since labels have been used. In recent years it has been increasingly emphasized that a label should perform another equally important function, that is, it should help the consumer in the buying of merchandise. Furthermore, a growing number of business leaders now recognize that the label that best aids the consumer by giving the information she needs for wise buying is also the label that does the best job of selling.

Labeling, a term that covers all means of identifying merchandise, is of concern to all involved in the sale of goods to consumers. And the problems to be considered are much the same whether the label is an integral part of the package or merely affixed to the merchandise.

The National Consumer-Retailer Council holds that truly informative labeling offers very real advantages to the manufacturer, the retailer, and the consumer. Informative labeling is the simple method of identifying the characteristics of quality and performance of consumer goods. It involves no new principles of merchandising. It merely applies to the buying and selling of consumer products the same principles that govern the purchase of practically all producer goods.

Manufacturers insist upon, and are willingly supplied with, specific information about the quality and performance of the producer goods they buy. For some time consumers have been asking why it is not possible for them to purchase in the same fashion. They are going to ask this question with increasing insistence during the months ahead. As prices increase, consumers will want more information about goods in order to make their money go as far as possible. The use of substitute materials, the changes in the established quality of some products which will probably be made, the need to make products last as long as possible—all these factors will also increase the consumer's desire for more information about merchandise.

MASTER LABEL OUTLINE

PURPOSE OF AN INFORMATIVE LABEL

The purpose of an informative label is to enable the consumer to buy wisely and the store to sell intelligently, to the end that the consumer gets the maximum satisfaction for the money expended and the store handles the transaction with the minimum possibility for returns and adjustment. An informative label should give the consumer a definite idea of the quality of the product by telling its composition and construction, what it will do, how to use it, and how to care for it—as a basis for intelligent choice, and to enable her to compare qualities. A definite idea can only be conveyed by specific facts. It is suggested that these facts be grouped under the six headings listed below. The order and the form used here are not significant.

OUTLINE FOR INFORMATIVE LABELS

It is understood, of course, that labels should conform to local, State or Federal regulations where such exist.

WHAT IT WILL DO (Performance)

Degree of color permanence; shrinkage or stretchage; breaking strength; seam slippage; resistance to water, perspiration, wind, wear; light, heat and power tests; power consumption; cost of upkeep; etc.

WHAT IT IS MADE OF (Composition)

Kind and quality of fibre, metal, wood, leather, ceramics, cement, rock, fur, plastics, petroleum products, rubber, paper, bone, chemicals, drugs; ingredients of food products; etc.

HOW IT IS MADE (Construction)

Size, weight, number of yarns per inch, weave, number of stitches per inch, finish, ply, cut, hand or machine made, pressed, molded, stamped, inlaid; etc.

HOW TO CARE FOR IT

Detailed instructions for washing and/or cleaning; precautions to be observed in cleaning or in storage; refrigeration; oiling and greasing; polishing; etc.

RECOMMENDED USES

Purposes for which it is most suitable; recipes; etc.

NAME OF MANUFACTURER OR DISTRIBUTOR

Name and address of the manufacturer or distributor.

This outline, which first appeared in the Council's preliminary manual, Informative Labeling, has proved helpful in organizing the copy to be included in informative labels.



YOUR LABEL

IS A SAMPLE OF YOUR PRODUCT

FLEISCHMANN

DISTIL

Pookshill.

1 PINT

. . . OR

IMPERIAL



Hiram Walkers
Blended Whish
BLENDED AND BOTTLED BY

HIRAM WALKER & SONS I PEORIA - ILLINOIS Calvan

Calvery

Rlanded CW

The whiskey of goo

THE CALVERT DISTILL

Where sampling is impossible (as in the liquor field) or prohibitively expensive (as in most) your label must perform the job of introducing consumer to product. Your label is your identity and it should say everything you want it to say in the way you want it said.

Careful attention to these basic truths about packaging is the reason behind Fleming-Potter success in the label and box wrap field. We should like to serve your needs.



GENUINE

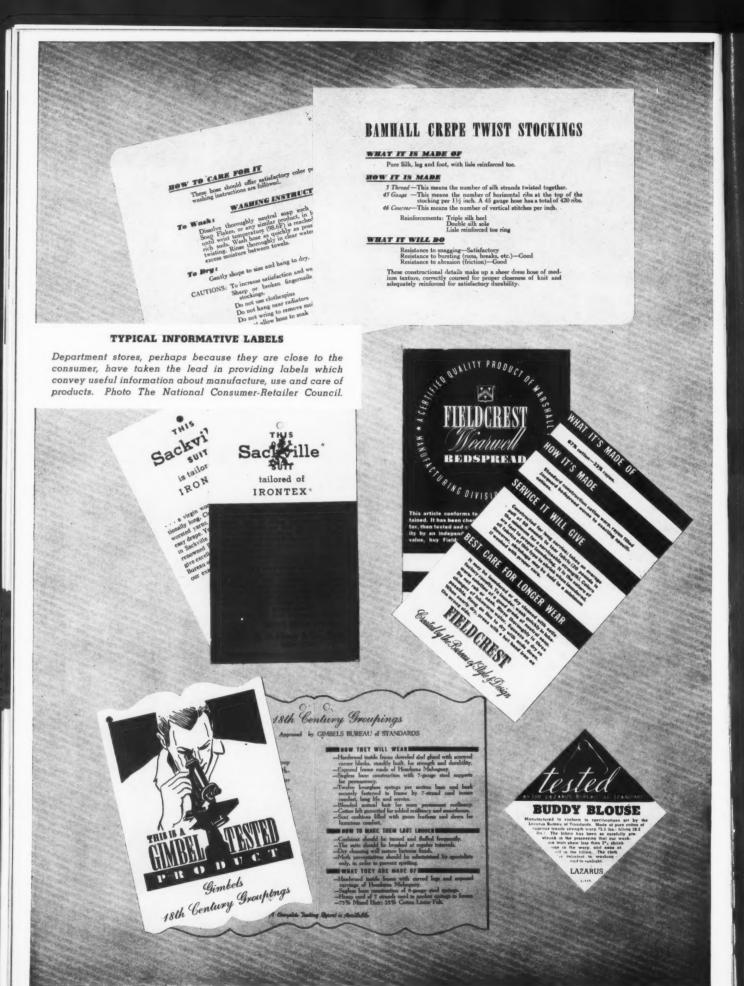
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Write for samples of lithographed and embossed labels and box wraps.



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THIS ONE NECESSARY INGREDIENT...

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PACKAGE

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The impact of the defense program has already resulted in an increase of consumer activity, and a much greater increase can be expected. It is well to remember that consumers are now far better organized than ever before and that the organization of local consumer groups is being encouraged by federal, state, and local governmental agencies. In the face of this increasing activity, the wise business man is going to recognize that the consumer's request for more information about merchandise is an important economic trend—one with which he should cooperate in order to build good will for his firm and its products. Informative labels provide the simple means of so doing.

The National Consumer-Retailer Council, which has studied the problem of labeling for a number of years, defines an informative label as one that answers five questions:

- 1) What will the product do?
- 2) What is it made of?
- 3) How is it made?
- 4) How should it be cared for?
- 5) How should it be used?

The manner in which the Council believes these questions should be answered is set forth in its Master Label Outline, reproduced on page 394.

Advantages of informative labeling

To consumer: That informative labeling holds equally substantial benefits for consumers, retailers, and manufacturers has been demonstrated by actual experience, as is shown in the Council's manual, *Informative Labeling*. Briefly, it can be said that informative labeling enables the consumer to shop efficiently with a minimum expenditure of time and energy, and to obtain maximum service, and consequently satisfaction, from goods once they have been purchased.

To retailer: Informative labels enable the retailer to explain prices in terms of the quality of goods, a service which will stand him in a very good stead as prices increase. Informative labels also help the retailer to:

- 1) Reduce returns and adjustments
- 2) Meet his customers' requests for information about goods
- 3) Provide an easy and effective means of training sales people to do a better selling job
- 4) Provide him with a practical method of informing the buying public as to changes in quality.

The last is of special importance during the present emergency.

To manufacturer: The advantages to the manufacturer are equally real. One outstanding benefit is that informative labeling helps to increase sales for better merchandise. From a customer's standpoint the value of informative labels largely depends upon whether or not they provide a basis for intelligent choice. Will the labels help the customer to compare one product with another like product at a different price? Experience shows that when consumers find merchandise of the

same type but different quality labeled in such a way that the reasons for price differences are immediately apparent, they frequently purchase goods which have the higher prices.

For example, in the men's furnishing department of one medium-sized store the best selling prices of the lines in shirts were \$1.98, \$1.65, \$1.39, and \$1.19, and volume of sales was evenly divided. Following the introduction of an adequate informative labeling program, 75 per cent of the sales volume shifted to the \$1.98 and \$1.65 lines. Informative labeling caused the public to purchase the merchandise with the plus values which the labels made clear.

A large mail order house lists in its catalog three mattresses at different prices. Upon the adoption of informative labels, telling in full detail what to expect and what not to expect from each mattress, sales of the lowest-priced mattress dropped, while those of the highest-priced mattress increased. As the result, the dollar volume of the department increased considerably and the net profit rose to a new high.

An equally important advantage is that informative labeling makes for better selling all along the line. Manufacturers have spent millions of dollars in training sales people to do their job more efficiently. An informative label represents the most effective, the simplest, and the least expensive device for training yet available, because it provides the sales person with a concise summary of the merits of the merchandise. Other things being equal, retail sales people, bombarded with questions by customers, will always push the product about which they have the most information. The manufacturer who supplies the relevant information about his product on the package that contains it or on a tag or label attached to the merchandise helps himself by giving the retailer the information necessary to promote the product properly.

Furthermore, an informative label provides the manufacturer of a nationally known product with one more opportunity to establish his trade name more firmly with consumers. Equally important, it provides a means by which he can lead consumers to associate the trade name with a definite set of values.

To national advertiser: To the manufacturer of a well-known product, the informative label can also provide a link between his national advertising and the point of sale. The message on an informative label reaches the consumer at the counter of the store. It ties in with and reinforces, at the decisive moment, the newspaper, magazine, or radio advertisement which has reached her previously in her home.

In a recent advertisement to retailers, a well-known manufacturer lists the following advantages of informative labels:

The label is a modern merchandising tool—useful to your customer—useful to your store. By giving the essential facts about a fabric quickly, clearly, and authoritatively, the label does all these things for you:

 It gives convincing and clearly understandable answers to your customers' practical questions.

PACKAGING CATALOG



Labels bearing grade indications of contents in accordance with "A-B-C" grade labeling standards evolved by the government. While not mandatory, this system is believed by some to convey information desired by the consumer.

- 2) It gives the facts that help your sales people in their selling.
- 3) It acts as a silent salesman when sales people are rushed.
- 4) It reduces store claims by telling customers just how to wash and handle garments.
- 5) It enables you to stage newsy promotions based on a subject of wide interest.
- It enables you to tie in with the manufacturer's national program of advertising and publicity.
- 7) It imbues your customers with confidence, helps improve customer relations.
- 8) It speeds up selling, pushes up profits.

Developing informative labels

Detailed suggestions as to how informative labels can best be developed are given in *Informative Labeling*. The procedures which may be followed can be only summarized here. In the development of labels, manufacturers will find that the first step is to check on whether there are any existing standards for the products to be labeled, a point on which the American Standards Association can give assistance. If standard methods of testing and grading the product have been developed, manufacturers will, as a rule, find that satisfactory labels can quickly be developed. Where no standards have been promulgated, a manufacturer may decide to follow through the seven steps outlined in the following and undertake an informative labeling program on the basis of his own findings from his own individual testing:

- 1) Determine the principal uses of the product.
- Determine the qualities necessary to make the product serve these purposes satisfactorily, preferably by analyzing a sufficiently large number of items that have been used extensively.
- Develop laboratory testing methods that duplicate service conditions as closely as possible.
- Determine reasonable standards of performance for each purpose served and for each grade of the merchandise.
- 5) Interpret on a label attached to the merchandise these standards of performance in terms that are understandable and meaningful to the manufacturer's own sales personnel, to the retailer, and to the consumer.
- 6) Develop a plan of promotion which will explain the values of the informative labels to the manufacturer's own sales personnel and to retailers as helps in selling, and to the consumer as guides for better buying.
- 7) Consult continuously with key retailers as to what their customers wish to know about the product; how satisfactory it is in use; and what suggestions they can make to improve its appearance, its efficiency, or its value.

Food labeling

It is somewhat simpler to develop labels for foods than for other consumer goods, since state and federal statutes prescribe both the minimum of information to be included on food labels and the way in which it shall be expressed and, obviously, the label of a food product must conform to these statutes. However, consumers want and manufacturers and distributors will frequently find it to their advantage to give additional information on food labels.

Where grades of quality have been established by the Agricultural Marketing Service, the use of them, which is voluntary, is advised. Grade labeling based on these standards constitutes the simplest and most effective type of labeling possible. When this is used, the Council suggests that the labels, in addition to stating the grade, should provide information as to the factors on which the grade is based and also to make clear the differences between grades.

The language of labeling

The language of labeling deserves careful attention. Too often specific information is omitted from labels in the belief that the customer will not understand it. Yet many customers are asking for far more technical information than they have thus far been able to obtain. Many consumers realize that the definition of a technical term in simple and specific language is easier to understand and is more valuable than vague statements and meaningless guarantees.

When an item is presented in more than one price line, the information carried on a label is easy to understand, especially when the labels show clearly why, in terms of differences in quality, one item is priced higher than



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From the creation of original designs for new or old packages, to final production of the perfectly printed label, Ever Ready's efficient organization — men and machines — is packaged to package YOUR business!

Efficiently, dependably and at lowest cost — millions of labels roll daily along the mass production line, labels and LABELS ONLY — every kind for every need for every business.

Avail yourself of this efficient service today! Just send us YOUR package, and whether your requirements be labels for shipping, advertising, product identification or for ANY USE, Ever Ready will satisfy your every demand.





another. For example, not many consumers will know whether or not a 21¢ towel should absorb water at the rate of 33 ounces for each square yard of fabric—or whether that amount represents a good, bad, or indifferent rate of absorption. However, when the consumer is told that the 21¢ towel absorbs 33 ounces of water, the 25¢ towel absorbs 49 ounces of water and the 35¢ towel absorbs 60 ounces of water in each square yard, she sees at once that the 35¢ towel will absorb almost twice as much water as the 21¢ towel.

The amount of space on a package to be given to the information that constitutes the label, also should be considered with care. Since the principal function of a label in the past was to identify the brand name or maker of the product, only a small decorative label was needed. The functions of the modern informative label have greatly expanded. Today it serves as an effective merchandising tool for the manufacturer and retailer, which enables the customer to buy a product wisely, and to care for it and use it properly. Therefore, the label should be large enough to perform all of these various functions effectively.

National Consumer-Retailer Council

The National Consumer-Retailer Council stands ready to give its aid and assistance to any retailer or manufacturer who wishes to develop informative labels. Much help will be found in the Council's two publications, Informative Labeling and Informative Selling. In addition, the Council has developed forms or outlines of labels for a number of commodities. These forms are available on request and show the kind of information that, in the

opinion of the Council's Label Committee, is needed by consumers for wise buying. The Council is also glad to make available the consulting facilities of its staff.

To manufacturers or distributors whose labels, upon formal submission to the Council, are found to meet Council requirements, the Council is willing to grant permission to use the following legend: This is the type of label suggested by the National Consumer-Retailer Council, Inc. Approximately 250 labels of a number of different producers throughout the country have now been approved by the Council as to the type of information they provide and, therefore, carry this legend.

Because the three national consumer organizations affiliated with the Council actively support its program for informative labeling and keep their local units throughout the country apprized as to the progress made, it has been found that the use of the Council's legend on labels is of real value in public relations. A not insignificant part of this value lies in the fact that hundreds of educators are using material that describes the approved labels in their classes in home economics and consumer education. The Council, therefore, believes that it is doing an effective job in reaching both today's consumers and those of tomorrow with news about the labels it has approved and-more important-with concrete evidence that a cooperative relationship between consumers and business represents an effective method of solving the consumers' problems.

The use of informative labels pays dividends at any time. During the present critical period, they will pay greater dividends, both in actual profits and increased good will, than ever before.



Above: Label embodying dietetic information developed by American Can Co. Photo Stecher-Traung Lithograph Corp. Below: Label presenting illustrated information and several recipes about using contents. Photo U. S. Printing & Lithograph Co.



NEW ATTRACTIVENESS OF COLOR ON A BACKGROUND OF SATIN

JODAY, MORE THAN EVER, THE INGENUITY AND RESOURCE-FULNESS OF THE CREATORS OF FINE PACKAGING—IS CALLED ON FOR NEW METHODS, NEW APPLICATION OF OLD METHODS, AND NEW USES FOR MATERIALS NOW READILY AVAILABLE.

THE DESIGN ON THE PRECEDING PAGE WAS CREATED BY OUR ART DEPARTMENT TO BRING OUT A WOODCUT EFFECT IN FULL COLOR.

THE COMBINATION OF THE SHARP CLEAN LINES ON THE SOFT SATIN SHEEN IS ONE WHICH OFFERS POSSIBILITIES FOR THIS MEDIUM IN THE EVER WIDENING SEARCH FOR NEW TRENDS IN BETTER MERCHANDISING DESIGN.

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DESIGNERS - ENGRAVERS - PRINTING CRAFTSMEN BOX WRAPS AND LABELS OF DISTINCTION

Tags—identifying and descriptive

by J. J. Ford

PRODUCT properly identified, marked, described, is already half sold. The extra attention-value of a tag often makes it a more effective sales aid than any other form of marking, identification, or description. This is especially true if the tag is written, designed, and printed by men experienced in the copy writing, layout, and production of tags.

What a tag is

In many cases a tag is the only way to identify a product:

- 1. When the use of adhesives and firmly fastened labels would be inadvisable, as on fine clothing.
- When products, such as tools, are packed in some number of units to a container, tags can identify and describe them after the outer package has been destroyed.
- For various unpackaged products, for example, wire fencing, a tag may be the only sure and practical means of carrying essential identifying and informative data to the consumer.

The why and when of tags

The manufacture of a one-color, strung tag with reinforced paper-patch eyelet requires four distinct operations. These are (1) printing, (2) application of the patch, (3) die-cutting for shape and string hole, (4) stringing. Originally, each of these operations was

performed on a separate machine, and a hand-operated mechanism for the die-cutting of tags was in use as early as 1854. In 1863 E. W. Dennison obtained a patent for the reinforcing of a paper tag with additional thicknesses of paper in the shape of a round patch or eyelet. In 1876 he patented a power device for eyelets and at about the same time persuaded the Fall Mountain Paper Mill, of Bellows Falls, Vermont, to build under his direction a machine for joining together the two rough sides of the webs of paper to obtain a tag stock with two smooth sides. This became the pattern for other cylindrical paper-making machines. In 1890 this same E. W. Dennison perfected a machine for printing, patching, and die-cutting tags in one operation. A modern tag machine does all these things automatically, printing up to four colors, and also attaches the fastening device-string or metal-in one operation. Numbering, eyeletting, couponing, scoring, punching, slotting, and counting can be done at the same time.

Classification of tags

Tags may be classified in five different ways according to:
1) use, 2) construction, 3) the means of attachment,
4) stock, and 5) color and finish.

I. Use

- 1) Shipping tags
- 2) Price and sale tags

Seven distinct functions of tags represented here: (1) Job ticket; (2) Sale marker; (3) Shop record and claim check; (4) Merchandise description and specifications; (5) Attachable shipping tag; (6) Directions for using product; and (7) "Moneyback" guarantee. Photo The Dennison Mfg. Co.



PACKAGING CATALOG





Varieties of construction possible. Right: The different methods of attaching tags. Photos The Dennison Mfg. Co.

- Guarantee tags
- Instruction tags
- Industrial forms (system tags)

(This includes couponed and numbered or unnumbered tags, available in duplicate and triplicate if desired. These are used for such purposes as keeping inventory and manufacturing records in mills and factories; and records of inventory, repair, and alteration in retail establishments, such as laundries, shoe repair shops, garages, and parking lots. Also available are small ma-chines for imprinting variable information of such nature that it cannot be determined and imprinted at the time the main body of the tag is produced, e.g., Dennison's Dial-Set Printer.)

- 6) Manifold tags-Regular or carbonized slips of paper, either plain or printed, are attached to the tag.
- 7) Informative tags-(see section on Informative Tags)

9)

10)

11)

12)

13)

14)

2. Construction

- 1) Flat
- Booklet 2)
- Coupon 3)
- Neck of bottle 4)
- Top of can 5) Door knob

- Tags in gangs a) for typing
- Tag envelope
 - b) for imprinting
- Calendar Merchandise cards 16) -for sampling

Metal rim

Dumbbell

Postcard

Gauge

Folding tickets

Bendover tickets

(Tag scan be made in almost any shape. One prominent manufacturer offers some 2,000 stock designs or shapes, many of them in several sizes, and in such shapes as shields, bells, stars, hearts, keyholes, sausages, shoe soles, cowhide, baskets, various animals, fruits, flowers, plants, etc. Other special shapes can be made to order, designed to show the nature, origin, or use of products, to reproduce a trade mark, emphasize a sales slogan, or ogive individuality in other ways.) to give individuality in other ways.)

3. Methods of attaching

- 1) String-also cotacord, ribbon. etc.
- 2) Wire
- Various slots. button, c.g., baggage, knife
- 4) Snap-Lok

- 5) Rubber band (hook slot oatch)
 - Deadlock Sharp a)
 - b) Dull c) Safety
- Parcel hook
- Barb
- Bar-Lok 9)
- 10) Safety pin hook (Use of metal tag fasteners is governed by law in certain
- 4. Stock-(Selection of the proper type and
- weights is vital):
 - 1) Card—Available from standard manufacturers in many different weights.

11) Pin ticket (auto-

and attached by

special machine)

14) Pinless griptickets

matically

12) Kimflex

13) Kimloc

16) Kimhose

15) Klip tickets

17) Gummed back

printed

- 2) Cloth-Available from standard manufacturers in many different weights.
- 3) Special-Transparent cellulose acetate and any material that can be handled like card.

5. Finish

- Colors—Standard manufacturers offer fifteen colors in card and five colors in cloth for tags. A tag of any color can be imprinted in one or more additional colors.
- 2) Coating-Paraffin, lacquer, and various other special finishes can be used to make tags resistant to scuffing, grease, water, alkali, acids, and to meet any other requirements which special needs may dictate.

Tags and the present emergency

Allocation of materials for defense needs is likely to reduce the variety of stocks, colors, and finishes for tags and the methods of attaching them. Priorities on metals have already affected production of metal rim tags and all tags attached by means of metal devices. Special stocks, certain colors, and some special coatings also may be restricted in the interests of conservation.

Informative marking pieces

by Edwin Pomranka

N a sense, the very first tag ever made—it was a small, flat, pierced, rectangular stone inscribed by a Babylonian dead now some 3,000 years—was an informative one. Every tag used gives information of some kind to someone. However, the term *informative* tag today means a very specific type of tag.

Definition

A large retail company which pioneered in the adoption of such marking pieces evolved the following definition:

Any tag, label, wrap, box ticket, package insert, or similar device that supplies the customer with truthful, definite information that will be of assistance in doing a more intelligent job of buying, a better job of using, and facilitate re-ordering.

Marking pieces specifically planned to produce the results mentioned in that definition are fairly new. But within the past two years they have gained such wide-spread popularity that millions of them are being used in the nation today.

For convenience and brevity, the rest of this article will refer only to Informative Tags; but everything said here will apply with slight variations to other types of marking pieces—labels, wraps, tickets, package inserts, etc.

Why be informative?

Unlike Topsy, the practice of using Informative Tags did not "just grow." They were conceived and developed, and are dedicated to certain very specific purposes. Today the primary reason for the wide use of them is that they are strong producers of extra sales and more profits. Users of informative tags may have

adopted them originally to give the facts demanded by followers of the consumer movement, or to meet the labeling requirements of various federal, state, and local laws. But now—and this is most important—such tags are used to cash in on the selling power and profit-pulling power which these marking devices are able to give.

At first, feeling a natural resentment toward the radical element in the consumer movement at the time, manufacturers were reluctant to adopt the idea of marking their goods informatively. A similar distaste existed for labeling on a "must" basis. Accordingly, many went only so far as the law required—until experience showed them that it sells and it pays to go further.

Points to cover

A really complete informative tag might cover a baker's dozen of points:

- 1. Trade name (what to ask for): In a long line of products it may be desirable—a) for all to carry the same brand name; b) for each to be given a strong individual brand name; c) to use an over-all name and sub-names.
- 2. Composition (what the product is made of): Kind and quality of fibre, metal, wood, leather, ceramics, rock, fur, plastic, petroleum product, rubber, paper, bone, chemical, drug, or other ingredients.
- 3. Construction (how the product is made): Size, weight, number of yarns or stitches to the inch, weave, finish; ply-cut, made by hand or machine, pressed, molded, stamped, inlaid; fasteners, seams, lining, reinforcements, special processing, or other special features.
- Technical specifications: Besides information and/or insignia required by federal, state,

Information conveyed by tag may consist of (1) facts about manufacture or raw materials; (2) directions for care; (3) recipes for use; (4) specifications as to construction; (5) the chemical formulae or content. Photo The Dennison Mfg. Co.



or local laws, this covers such hard-to-remember technical facts as: degree of permanence of color; degree of shrinkage or stretching; breaking strength, seam slippage; resistance to water, perspiration, wind, wear, and erosion; tests with light, heat, and power; consumption of power, cost of upkeep, or any other operating data.

- How to use the product: Operating instructions, purposes for which the product is best suited.
- **6. Competitive advantages** (what the product will do): Hidden features and advantages.





7. How tested: Standards or specifications met; seal of approval or certification of manufacturer's or independent laboratories.

8. How to care for the product: Shipping, assembly, installation, cleaning, washing, storing, oiling, greasing, polishing, and/or instructions on repair.

Guarantee (what stands behind the product):
 A consumer survey has showed this a valuable selling feature.

Price and information on time-payments: On a line of products, information on prices frequently leads to trading-up on the part of the buyer.

 Cross reference to related products: A strong selling aid.

 Changes and improvements in a product: For example, changes made necessary by priorities.

13. Seller's name and address (who makes the product): Name and address of manufacturer, processor, sponsor, or distributor.

Who benefits-and how?

Manufacturer, retailer, and consumer alike benefit from an informative tagging and labeling program. Benefits to manufacturer and retailer are parallel, and can be discussed together. The use of Informative Tags:

1. Establishes a trade name: Because the name is on the merchandise at the point of sale, it sticks in the mind of both clerk and customer. The importance of establishing a trade name is indicated by surveys which have shown that more than 50% of retail sales may be due to the selling-power of a well-established name.

2. Acts as a silent salesman: Keeps the customer happy until the clerk can serve her; saves the clerk's time by answering questions the customer must otherwise address to him.

3. Trains salespeople: Gives them the basic facts and strongest selling arguments—and phrases—concerning each product; is of especial help to the new salesman—and, similarly, facilitates transfers of clerks from slack to busy departments during holiday seasons.

Above: Illustration shows elastic functions of tags, varying from simple identity to elaborate booklets in form of tags, giving instructions for use and care. Below: Various grades of towels in the same general line are distinguished by tags which give thread count, water absorption, and other equally important data. Photos The Dennison Mfg. Co.

TAGS FOR GRADED MERCHANDISE

Sears Morning Glow Towel INFOTAGS clearly show consumers the step-up in quality as price increases

	Morning Glow No. 8152 22 × 44 .19	Morning Glow "TEXTURA" 18 × 36 .25	Morning Glow "DAISY" 22 × 44 .39	Morning Glow "BLOSSOM" 22 × 44 .59	Morning Glow "WINDSOR" 25 × 48 .89
Weight per sq. yd.	8 oz.	Same	10 oz	11 oz	15 oz.
Moisture absorbed per sq. yd.	30 oz.	Same	40 oz.	55 oz.	70 oz.
Loops per sq. in.	340	396	442	495	612
Yarns per sq. in.	98	102	108	111	123
Warp yarns' resistance	45 lbs.	Same	35 lbs.*	Same	55 lbs.
Filling yarns' resistance	40 lbs.	45 lbs.	55 lbs.	50 lbs.*	65 lbs.

^{*} Though this figure is less than the one for the towel next lower in price for this specific test, this towel is worth more because all the other test figures increase. N.B.—These Sears INFOTAGS carry the NC.RC legend, "This is the type of label suggested by the National Consumer-Retailer Council, Inc."

J'S PACKAGING SERVICE begins with the MERCHANDISING IDEA...



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appetizing ways of using the product.

For packaging materials designed to sell the consumer see your "U-S" man.

THE UNITED STATES PRINTING AND LITHOGRAPH COMPANY AND DIVISIONS

Home Office: 313 Beech St., Cincinnati, Ohio Sales Offices in Principal Marketing Centers

5 Great "U.S" Plants ... STRATEGICALLY LOCATED ... PRODUCING PACKAGING and ADVERTISING MATERIALS OF HIGHEST QUALITY



- 4. Gains the good will of consumer organizations: By presenting facts.
- 5. Promotes correlated selling.
- 6. Cuts losses on returned goods: Helps the customer make the proper initial selection; helps to eliminate returns due to improper use or care of an article. Verbal instructions cannot take the place of a written reminder.

take the place of a written reminder.

7. Re-sells the purchaser after the sale:
An Informative Tag on a product helps to maintain the state of mind that prompted the original purchase—a corollary to No. 6.

- 8. Meets legal requirements on marking: When the law requires certain information on a tag it might as well carry special selling information also.
- **9. Combats vicious competitive prices:** A tag or label on better merchandise can justify the difference in cost over cut-price goods.
- 10. Fosters step-up selling: A customer will often willingly pay \$3.98 instead of \$2.98 if it is made clear that extra wear, extra satisfaction, extra comfort, etc., go for the extra dollar.
- 11. Makes advertising more effective: Reminds the customer, at the vitally important point of sale, of all the advantages stressed in other advertising. A tag fills the time-gap between the moment of reading a company's advertising and the moment of arriving at the place where the product can be purchased—a gap which often short-circuits many sales.
- 12. Helps the merchandise buyer: He can classify the product in his line, and buy more intelligently. It may also show up unnecessarily numerous price lines and point to profitable elimination of some of them.

Finally, to quote the experience of one of the largest textile mills in the country:

13. "It improves customer relations by infusing store customers with confidence in the performance to be expected from the fabrics . . . provides a new means of interesting customers in what they are buying and provides striking evidence of the store's willingness to give the

consumer facts about what the store is selling." (Release from Women's Wear, dated 4/24/40.)

The consumer benefits from informative tags and labels because 1) anything that helps to reduce the cost of merchandising and selling is eventually reflected in lower prices to him; and 2) an informative tag or label which enables him to buy, use, and care for merchandise more intelligently, conserves his income and raises his standard of living just as surely as an increase in pay.

Check list for informative tags and labels

When planning an informative tag, it has been found helpful to consider it as comprising three important factors, as follows:

- A. Copy—the most important element—should be:
 - 1) Concise
 - Specific
 - 3) Tabulated, short sentences or paragraphs—better still, single words
 - 4) Facts the customer can understand; but never underestimate his intelligence
 - 5) Facts and features a sales clerk can use.
- B. Design and type face—must not dominate copy; should be:
 - 1) Simple, pleasing
 - 2) Not obtrusive
 - Of such nature as to indicate the dominant characteristic of the merchandise; i.e., strength, gracefulness, weight, lightness, style, durability, etc.
- C. Color—should:
 - Harmonize with merchandise; there is an appropriate color to use with each product
 - 2) Hint at the nature of the merchandise; e.g., cool blues to suggest coolness of print summer dresses; warm reds and browns for gloves and overcoats to shut out Old Man Winter
 - 3) Establish value of recognition through design and color scheme just as that established through trade mark or trade name.

Legally part of the labeling, tags in the form of all-around bands here assume the task of carrying information required by strict food laws as well as the brand identity of the maker. Photo The Dennison Mfg. Co.



Embossed labels and seals

by C. E. Hensel

BECAUSE of their decorative effect, embossed labels, seals, and tags are being increasingly used on merchandise that is to be dressed up to any extent. The third-dimensional effect is a luxurious touch which adds greatly to the sales appeal of any articles when these labels are used on a plain container.

The unique automatic method of production which combines die-cutting and embossing has developed a special type of product which is easily recognized by the sharp embossing of small details and the close registering of the printed matter with the embossing and die-cutting. It makes it possible to obtain intricate shapes and cut-outs, scoring, the punching of holes and slots and consecutive numbering. Changes of inserts, weight, and contents are easily made.

The paper stocks used are the metallic, highly glazed (to reflect light) and pyroxylin coated, with or without

WILD COMPANY

Dickies Supplementary

PINE OIL



gum on the backs. All these materials are sold by the ream or by the roll.

Printing (up to three colors), embossing, and diecutting are all done in one operation. The paper stock, fed from a roll, passes on a rubberized endless belt underneath the three units of the machine. The belt provides the cutting die with a fresh surface for every impression and makes a good cushion for sharp embossing. It also acts as a conveyor which carries the finished label forward to the stacking unit.

For small runs brass dies are used for all units. For larger runs the cutting and embossing unit is engraved in steel. For longer wear and to preserve the cutting edge, steel dies are case-hardened and brass plates are coated with chromium. Dies are etched with iron perchloride from black and white drawings. In most cases considerable hand engraving is required to bring out the details of embossing. A very important part of this process is the sharpening of the cutting edge, which is also done by hand. To obtain certain artistic effects, and where highly embossed and fine modeling is required, dies are made entirely by hand.

The height of an embossed pattern (swedge) is never greater than 1/8 in. and requires a body grasp (surrounding area) of 3 times the depth to get sufficient pull. Swedge is determined by the thickness of the foil and not by the backing.

Designs should be planned to fit this particular printing process. Original sketches are often made right on the stock to be printed. When designing a label or tag for automatic embossing, it is preferable to have some part of the embossed design show up in the color of the base, whether paper or metallic stock. Printing of one color on top of another should be avoided. Wherever there is any reversed printing, allowance should be made for the cutting edge which needs a narrow embossed border to facilitate die-cutting.

Labels are frequently die-cut and scored for emphasis on design and ease of application. They may be applied either automatically or manually. In comparison with the application of various other types of labels, a relatively high proportion of embossed labels is applied by the latter process as the more satisfactory method.

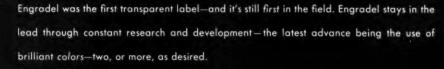
Above. Sometimes of metalized paper, sometimes on foil, embossed labels and seals afford possibilities of intricate die-cutting, sharp relief outlines, and striking brilliance of colors. Photo The Foxon Co. Below: Embossed seals and labels are used to create an impression of superior quality for products of such widely varying character as cosmetics, food products, confectionery, machinery, textiles—even flowers! Photo The Cameo Die & Label Co.











Engradel labels are alcohol-proof, a basic necessity in packaging toiletries and perfumes.

They are easily applied—in your own plant—under your own supervision—whenever needed. No forced package inventories when you use Engradel.

PALM, FECHTELER & CO.

220 West 42nd Street, New York. N.Y. • 21 East Van Buren Street, Chicago, Ill.
BOSTON CLEVELAND BUFFALO

* U.S. Patent No. 1803836

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Transparent labels

OST merchandise has some feature of appearance, color, texture, or form that can be made a powerful selling force. Under the stimulus of demand for containers that fully exploit visual possibilities, transparent labels were developed. These labels can be attached to glass or rigid transparent containers and still permit a full view of the contents. Several methods of producing these effects have been perfected.

Decalcomania transfers

Decalcomania transfers, produced by lithographic processes, permit the reproduction of trade marks, brand names and other data upon packages of glass, metal, plastic or wood—any type of rigid container, in fact, which permits either the product or the surface of the package to serve as a background for the lettering or the decoration.

This process of applying transparent labels to containers permits the use of an almost infinite number of colors and the attainment of highly decorative effects. Once properly applied, a decalcomania becomes a permanent part of the container, withstanding cleaning and considerable wear.

Printing on glass

Decorative labeling effects of the highest order can be obtained through the direct application of color to glass containers. This treatment, at first restricted largely to dairy and food products, is now widely used in the cosmetic, pharmaceutical and proprietary fields.

Fused-in colors are applied by the manufacturer of the container and are a part of the package itself. Since the

fused-in label becomes virtually an integral part of the container, counterfeiting of the product when packaged in such a manner is practically impossible. Fused-in colors are applied to the glass and then fired in. They are not to be confused with cold colors which are painted or silk-screened on.

Applied color lends itself to an infinite variety of decorative effects and styles of lettering, all of which are resistant to sunlight, acid, hot water, alkaline detergents, etc. A full range of brilliant colors is available.

Printing on rigid transparent materials

The effects of a transparent label may be achieved also on rigid transparent containers and displays made of cellulose acetate or nitrate. Here the sheet of material is printed or stamped from roll leaf while flat and then fabricated into a three-dimensional container. If the printing is designed without a background, the transparent label becomes an integral part of the container.

Printing on cellulose film

Data on labels may be printed on sheets of cellulose film which is backed with a suitable adhesive to make it adhere closely to the walls of a glass or plastic container. Since the carrying material is thin and transparent, the type and decorative matter seem to be applied directly to the surface of the container. When such printing is applied in reverse to the rear surface of the cellulose material, the label becomes impervious to stains, water, grease, etc. Such labels may be successfully applied to glass, plastics, metal, wood, rigid transparent cellulose, and non-absorbent papers of all types.



Fused-in designs, plain or in color, may be applied to clear, opaque or frosted glass containers. Such designs manifest a delicacy of treatment, are permanently decorative in character and counterfeit-proof. Photo H. P. Bender.

PACKAGING CATALOG





When the labeling is inadequate to tell the manufacturer's entire story, an attractive folder may be devised to accompany the package, to give directions, information about uses, etc. Photo Outserts, Inc.

Package folders

by Robert R. Brown

HE package of merchandise having been finally selected on trial by the consumer, this important transaction may be viewed by the merchandiser either as the end of the sale, or as the beginning of a re-sale. In the latter school of thought on merchandising, we find the function of package advertising. Instead of assuming that every trial buyer will automatically become a permanent customer, the package folder goes beyond the actual sale to the task of making regular customers. It takes nothing for granted. From its point of view, the trial buyer must still be "sold" as a customer even after the initial purchase is made. Consequently, the package folder is designed to meet the requirements of the individual product in terms of making permanent customers.

Uses for package folders:

There are four principal functions under which package advertising can be classified:

1) Directional use: If the product is new, difficult, or exacting to make or use, the package folder gives full detailed instructions on how to use it. So important is it to have the trial buyer use the product correctly that the caption on the folder often reads, "Do not expect satisfactory results unless you read this folder." Incorrect use may result in blaming the product, and the prospective customer is lost forever. Correct use means satisfaction—the first step towards making a regular customer for the product.

2) Variety of use: If a product lends itself to variety of use (and few do not), the package folder presents these different uses on the sound theory that variety means increased, continual, and quicker use of the prod-

uct. Even when the purchaser knows the uses of the product, the job of the package folder is to recall them to mind at the proper time and place. Foods constitute the most important group of products which lend themselves to variety of use; hence recipes have become a standard factor in merchandising. The package delivers them directly into the customer's hands without any waste or cost of distribution.

a) Premium promotion: The principal thought behind the use of the package folder to offer a premium with a product, is to induce loyalty to a brand. Many consumers do not confine themselves to any one brand of product, but shift from brand to brand and back again much to the exasperation of the merchandiser. To prevent shifting of brands, the package folder describes in detail the premium offer and presents a coupon for redemption. Usually, these offers are self-liquidating, secured by a small payment of cash with one or more labels or other items that identify the package.

4) Cross advertising: A standard and long established use for package advertising is to promote the sale of other products in the line. It is based on the sound idea that a branded product which already enjoys acceptance, can be utilized advantageously to sell other products of the same line. As a rule, the big seller in the line is used as the medium of circulation for the package folder which is designed to stimulate the purchase of more slowly moving items.

Point-of-sale promotion

While package advertising is basically designed to function after the sale is made, it has recently taken on the

PACKAGING CATALOG

added job of influencing the original purchase at the point of sale. A package folder on the outside of the container which offers a premium, definitely guides purchasers to that brand in the retail store. This is particularly true in the super-market where customers can handle and examine the products before they buy them. Even recipes with the package direct purchases to certain brands as they help the housewife in planning meals. Such items, however small in value—provided that they have utility—give a "merchandising plus" to the product in the retail store as against competitive brands that offer nothing. This added function of influencing the original purchase in the retail store has become a vital factor of package advertising and will become increasingly important.

Types of package literature units

Co-product inserts: Packed in with the actual product. It usually is placed on top of the merchandise as a last operation—either by hand or by special machinery—before the package is closed.

Because of the chemical reaction of many inks, government regulations are strict and specific on the use of certain non-poisonous vegetable compounds if the product requires it. The inserts are usually the single-leaf form because with fine-ground products such as flour, a folded insert may bring out considerable of the product when the insert is removed. Special oil-treated papers are used with oily products such as canned sardines, shoe polish, silver polish, etc.

Inner-carton inserts: Placed along side the bottle or jar. They can be inserted by hand or by special machinery, and are removed after the bottle or jar has been taken out. Because they are usually not seen unless the carton is examined after the bottle or jar has been removed, such inserts are often made inexpensively to allow for a high percentage of waste.

Over-end inserts: Placed over the end of the jar, tube, or bottle to make certain that it is not overlooked when the carton is opened. This requires a longer form of insert, a narrow multiple fold and breaking the paper over the end of the container. They can be either inserted by hand or special devices on the cartoning machine

operating at high speed. Insert has fine attention value. **Banded inserts:** Confined to an immediate container by bands of various materials. Most widely used is the rubber band, which can be applied only by hand. Other banding materials are kraft paper and transparent cellulose, usually applied by hand, although special automatic machinery can be built. The transparent cellulose band often used serves also to protect the under label as well as to carry copy.

Under-label inserts: Folder slipped directly under the label. This can be done by hand or by means of specially built automatic machinery. In some cases, the portion of the label holding the insert is left unglued to allow easy removal of the folder. To prevent the folder from slipping out in handling, it or the label is spot glued, which requires that the label be torn in order to remove the insert.

Collar band: Usually a single sheet with a die-cut hole. However, Neher-Whitehead and Co. of St. Louis have developed a patented form-fitting collar which has been used extensively in the dairy field. These reach the dairy sealed together, ready to go on the bottles.

Special banded label: A printed strip of paper or other material, wrapped around the container or product. A special form called Ad-Seal-It can be applied automatically in bread wrapping machines. It gives an over-lap sealed band around the wrap which carries the advertising message to the consumer.

The outsert form: A folder constructed to remain confined to the outside of a bottle, jar, or carton. It will not open up in shipment or on the dealer's shelf; yet is readily opened by the consumer. No carton or band is necessary since it is labeled directly to the surface of the container. Outserts are supplied ready for application. They can be applied by hand or by any standard semi-automatic or automatic machine at regular speeds.

A new development which has made regular canned products such as fruits and vegetables available for this type of consumer promotion, is the Outsert Labeling machine, a high speed labeling unit that will spot label outserts on containers at speeds up to 200 units a minute. This can be set into the production line and maintain normal production speeds without additional handling.



Package folders, either "inserts" or "outserts," may be attached to the package in a variety of ways. They carry the advertising messages which by this means get a "free ride" all the way to the consumer. Photo Outserts, Inc.

*** TRULY NATIONAL* *



Our name is a description of the scope of our label service. National labels will be found on tin, glass and cardboard containers from ocean to ocean. The produce of nearly every state in the country is packed in cans carrying National labels. National labelled packages are bought by consumers in every price class—they form a common denominator of markets, appealing to rich and poor alike.

Our production of lithographed and printed labels and wrappers in the millions each year is based on several factors. The most important is the spirit of cooperation with which we handle customers' problems. Our design staff is always at their service—at *your* service, if you wish. The planning department is backed up by the finest production processes we could devise: top-notch engraving, excellent lithography and letter-press printing. The result has made steady customers out of hundreds of the country's leading packagers.

The National Color Printing Co., Inc. FINE LABELS . PRINTING . LITHOGRAPHING . ENGRAVING . DESIGN . WRAPPERS

930 E. Monument Street

Baltimore, Maryland

Decalcomanias

ECALCOMANIAS are transferable designs, messages, trade marks, decorations, etc. They are made on a special type of paper and can be applied to almost any surface through the application of water or the use of a sizing. They are used for two reasons: (1) to decorate and identify surfaces which are difficult, impossible or expensive to print or otherwise decorate, and (2) to stimulate sales. They are applied to glass bottles, metal displays and packages, wood displays and packages, plastics, etc. There is practically no limit to their application. Basically, they provide an inexpensive and easily applied method of identifying anything from a delivery truck to a flacon of perfume with names, messages, and designs.

Selection of the type of "decal" depends entirely on the use to which it will be put. Various types of decals have been developed in their long and varied history, and most of them are still in use as they fill present needs. The varnish type is excellent for large surfaces—although it is often used for small—and can be had in unlimited sizes up to 10 ft. long or more. Lacquer types are often used for application on store windows. Slide-off types have many applications. An offshoot of this category—and one of the most attractive forms of decalcomania—is the multi-colored decoration which is printed on transparent cellulose film.

Decal designs and messages are built up in ink layers of various thicknesses, depending on the effect required. They are, after all, solid ink decorations which must hold together as they are removed from one surface to another, which problem can only be solved by reprinting until the design has a body of its own. Thus, 42 printings on a single decal are not uncommon.

Some are done face-down, with the part to be finally

seen printed first and later backed up with opaque pigments, finishing with several heavy layers of white to add strength and reflection value. Each color must be printed several times, according to the intensity desired. Some types of decals are printed face up, with the backing coats put on first and the colors intended to be seen printed last. Other decals are made back to back, with one surface designed to be seen through a bottle or store window and with the same or different design on the back for viewing through the back of a transparent container or from inside a store.

Originally developed to provide inexpensive and standardized decorations (practically all designs were once stock patterns) for buggies, bicycles and the like, decalcomanias have grown because they provide a reliable means of identification for products and packages of every type. They are not restricted to short runs, although one of their most important talking points is their economy for small quantity use, as in decorating a fleet of trucks where hand-painting would be too expensive and direct printing impossible.

They can be made in an unlimited variety of trade marks and names, patterns and colors. The modern transparent cellulose-sheet decal is widely used on many toilet-water, cosmetic and perfume bottles because it provides identification without destroying the transparency of the package and because of its alcohol, moisture-, grease- and oil-proof qualities.

In cases where the user desires to leave no surface marks, a lacquer decalcomania is used and then a coat of varnish applied over the label. This absorbs the lacquer, leaving only the letters and decoration covered by an even transparent coating. Tennis rackets and pianos as well as many other articles are decorated in this manner.

Decalcomania labels impart colorful brilliance as well as identity. Hand applied, they are simply a thin film of ink which slides off its paper backing to adhere to almost any smooth surface. Photo Palm, Fechteler & Co.



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Package printing equipment

by William Barton Marsh

HE truth is—and we might as well face it at once that there is no "standard" equipment for the printing and decorating of package wraps, labels, and containers. As every reader of Modern Packaging knows, the variety of containers used in present-day merchandising is almost limitless, and there are almost as many different types of printing equipment used to imprint or decorate these containers. The Printing Year Book and Almanac, well-known directory of the graphic arts, lists no less than 98 manufacturers of printing presses. Many of these manufacturers have produced through the years numerous different models of the printing press, some of which have been standardized for quantity production while others have been created to satisfy special needs and purposes. It is safe to say that most of these different models (excepting specialty presses and the great high-speed magazine and newspaper presses) have been used at one time or another as an adjunct to packaging.

Package wraps and containers and labels have been and are being today imprinted and decorated on every conceivable type of equipment from the simple, hand-fed job press to the intricate, web-fed, multi-color offset or gravure press. In short, the selection of equipment and method of reproduction to be used must depend upon the character of the job to be done. One can no more say that any one type of printing equipment is the best for package work than one can say that any one type of knife is the best for cutting.

Here are some of the basic factors which must be considered before a decision can be reached as to the type of printing equipment which will be most suitable for any given packaging job:

1. What material is to be printed or decorated?

It makes a great difference whether reproduction is to be done on paper, cardboard, cellophane, metal, or some other of the innumerable substances used in

the construction and wrapping of containers. No one printing unit has ever been constructed that will reproduce on all of these different surfaces with equal success.

2. What is the quantity to be produced?

Length of run of any given label, wrap, or container is highly important in selection of equipment. It is impractical to attempt to produce package wraps or containers in production units of a few hundreds or thousands on the same type of equipment that is used, for example, to turn out chewing gum wrappers for which production units run into the millions.

3. What quality of work is required?

The amount the manufacturer can afford to pay for his container may be any figure from a fraction of a cent to one preceded by a dollar mark. His choice of wrap or container, of elaborateness of design, of number of colors to be used in decoration, will depend upon this factor of cost as well as on the kind of merchandise he sells, the market he hopes to reach, the competition he has to face, and so forth. Certainly the packaging of a 5-cent bar of soap will differ in many respects from the packaging of some exotic perfume which sells at \$50 an ounce. The printing equipment most suited to the job must be gauged partly by the quality of the work to be done.

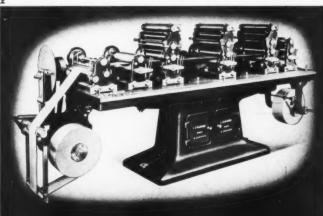
4. What are the characteristics of the container?

If it must be water-proof, dust-proof, scuff-proof on dealers' shelves, resistant to acid, heat, or cold—all these factors have a bearing on the type of basic material from which the container is made and consequently upon the type of surface to be decorated. They also have a profound influence upon the kinds of printing inks, over-print varnishes, etc., that may be used and the methods of applying them. Obviously this directly affects any decision as to printing equipment.

Since it is impossible to describe here all the different types of printing equipment that may be used for pack-

1. Typical sheet-fed letterpress equipment. Letterpress was the first to be developed and still is the most commonly used process of graphic art reproduction. Photo American Type Founders, Inc. 2. Typical web-fed multi-color letterpress equipment. This press operates with continuous motion, the paper traveling through in a straight line. Photo L. Chambon Corp.





JOHN WALDRON CORPORATION

MAINSOFFICE AND WORKS-NEW BRUNSWICK, N. J.

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CHICAGO-201 N. Wells St.



"Centennial" Embossing Machine

Waldron Embossing Machines are built in a wide range of types for producing desired effects on any material with roll embossers. Each machine rigidly built and correctly designed and proportioned with respect to the important factors of speed, pressure, and tension for particular requirements.

Waldron Embossing Rolls provide a longer life due to the use of carefully conditioned paper in their construction and their harder, more even surface.



The New Waldron Fluid Ink Press

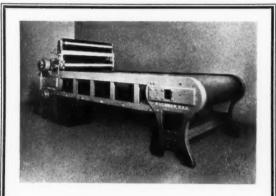
Designed to distribute any type of fluid ink—water colors, aniline, pigment lacquer, rotogravure, letter press, and surface printing inks. Adaptable for tandem operations. Surface prints may be superimposed upon engraved effects when using inks of light base. Quickly convertible from engraved to surface printing operation and vice versa. Various models are proportioned for handling goods of all widths of from 30 inch up to 90 inch with equal accuracy.



Manufacturers of Machines for EMBOSSING—PRINTING—COATING WAXING—LAMINATING—LACQUERING SLITTING—REWINDING—DRYING

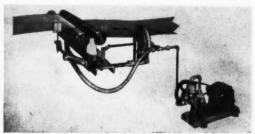
CIO

HOT MELT COATING AUTOMATIC GUIDERS SCREEN PRINTING



Screen Press

Achieving a new development of the oldest known decorative art—screen printing. This is a silk screen press designed for continuous printing for either web or sheet materials.



Waldron Automatic Web Control, The Waldron-Dickhaut Automatic Web Guide for guiding paper in processing in-



Waldron Lacquer Coater

Waldron Coating Machines are available in knife, combination roll and knife, roll coaters, reverse roll brush type and Bracewell Centrifugal Contour covering the entire range of coating requirements. Regardless of the kind of coating material used—thin staining material for tints, waterproof material, varnish, lacquer, or clay—a Waldron machine can be depended upon to apply it faster, smoother, and better.

The Waldron Reverse Roll Coater is specially designed for the application of quick drying lacquers or varnishes.



New Waldron Laminating Machine for Cold and Hot Melt Adhesives

For the combining of cloth, paper, regenerated cellulose and boards using paste, asphalt, lacquer, latex, thermoplastics and hot melts. Ideal for applying adhesive to transparents smoothly and without "ribbing."

Engineering Service

To assist in solving your particular processing and production problems. Inquiries of any nature invited and treated in confidence.

PACKAGING CATALOG

aging, discussion will be limited to the major printing processes now in common use and to a few typical examples of the equipment commonly used in each of them.

The three major printing processes

There are only three major printing processes in common use today: 1) Letterpress or relief printing; 2) lithography or planographic printing; and 3) gravure or intaglio printing. The many variations listed under each of these main headings are mostly in superficial technique rather than the basic processes. Collotype reproduction, for example, differs considerably in technique from lithography, but both are basically planographic processes. All three of these major processes are regularly used in the imprinting and decoration of containers. A correct solution of package decorating problems, therefore, requires some understanding of all of these processes and of the outstanding characteristics of each.

1. Letterpress or relief printing: The fundamental process of reproduction in graphic arts both because it was the first to be developed and because it is still the process most commonly used. In letterpress printing the image is reproduced by the application of ink to a raised or relief surface. The first medium used for relief printing was probably the wood cut, which was employed to reproduce pictures even before Gutenberg. Today letterpress printing utilizes type or plates or any character cast or engraved in relief on metal, wood, rubber, linoleum, plastic material, or any other substance that will receive and hold the outline of the picture or character to be printed.

Letterpress printing has great flexibility, is particularly notable for its sharpness of outline and its ability to reproduce strong, clear color.

2. Lithography or planographic printing: Called *planographic* printing because in this process the image to be reproduced is on a plane surface, not raised as in letterpress. The process is made possible by the natural, mutually repellent properties of oil and water. In the original process (now known as *direct* lithography) the image is drawn with a greasy medium on a piece of semi-porous stone which is then moistened with water. When ink is subsequently applied to the surface of the

stone, it is repelled by the water and adheres only to the greasy outline of the image. This is reproduced by applying paper under pressure directly to the surface of the stone.

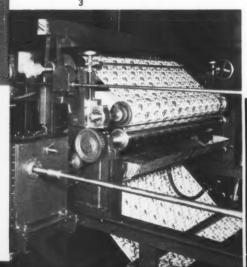
Today direct lithography has been to a very large degree superseded by offset lithography. The basic principle of the process is the same, but in offset the image to be reproduced is etched by means of light upon a thin metal sheet which has been previously sensitized by a coating of bichromate albumin. After proper treatment, the albumin is washed away except where the image rests. Thus the image itself will accept the ink, whereas the raw metal when dampened with water will repel it. The image is not reproduced by the direct application of the paper to the inked image. The ink is first transferred or ''offset'' on a rubber blanket from which it is in turn transferred to the paper.

Offset lithography is particularly notable for a softness of tonal values difficult to achieve with letterpress. Offset is likewise most valuable for reproduction upon surfaces (such as coarse-grained papers, cardboard, etc.) which are not suitable for the precise reproduction made by letterpress.

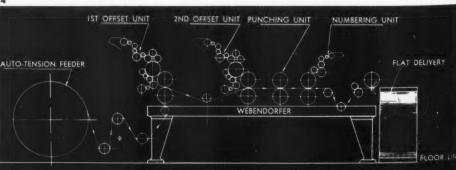
3. Gravure or intaglio printing: The direct opposite of letterpress. The image to be reproduced is cut into a thin sheet or cylinder of copper. The ink, which is applied as a very thin liquid, fills up the small interstices of the image—excess ink being removed by means of a "doctor" blade. The image is transferred to the paper by direct pressure, the paper sucking the ink from the recessed dots that form the image. Gradations of tone are obtained by varying the depth of the engraving; areas that are to reproduce the darker images are more deeply cut into the metal and carry more ink. Thus by means of gravure printing it is possible to achieve a full range of values from full velvety tones to fine highlights.

Typical printing equipment

Some idea of the variety of printing equipment now being manufactured, may be obtained by referring to the *Printing Year Book and Almanac*. This reference book divides manufacturers of printing presses into nine different groups listed below. Obviously there is considerable duplication in this listing, many of the manufacturers



3. Multi-color gravure printing press. Webs run from 10 in. to 60 in. in width. Available in one to four colors. Photo Gravure Labs., Inc. 4. Profile drawing of two-color, web-fed and high-speed offset press. Paper is fed through press by auto-tension feeder. Photos Webendorfer Division of American Type Founders, Inc.



oat PACKAGES and LABELS

with Nitrocellulose Lacquer

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HERCULES POWDER COMPANY

931 Market Street • Wilmington • Delaware

NOTE: This advertisement is coated with lacquer containing Hercules Nitrocellulose.

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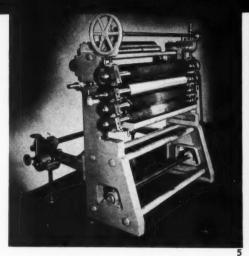
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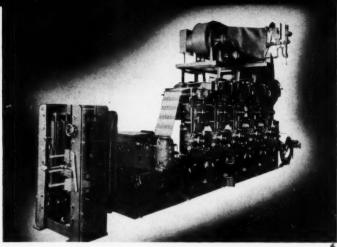
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5. A machine which can be used for rubber roller printing, rotogravure printing, aniline coloring, pigmented coloring, gold and silver coating and relief topping of embossed stock. Photo A. E. Marconetti, Inc. 6. This five-color rotogravure press delivers up to 54,000 wrappers or labels an hour. This machine has almost unlimited size range. Photo Champlain Corp.

being listed under several categories. It is also clear that there are many printing presses constructed for particular purposes which have little or no relation to packaging. The list of possible equipment which may be used for packaging is so long that only a few typical examples of the printing equipment more commonly used can be given here. These examples are:

Type of Press Manufactured M	Number anufacture
For aniline and other fluid inks	13
For production of continuous forms: fanfold, multiple billing, sales books, and snap-out Hand-fed and automatic cylinder, die-cutting and creasing, embossing, and perfecting	13
small hand presses	32
Sheet-fed, rotary gravure	24
Sheet- and web-fed offset, offset perfecting, metal decorating, combination offset and	
letterpress	17
Proof presses	11
Sheet- and web-fed, rotary presses: flat-bed web and others	24
For stamping, die-stamping, and roll leaf hot stamping	14
For specialties: cartons, milk-bottle caps, tags,	
tubes, and wrappers	51

Letterpress equipment

Most letterpress equipment, except that used for newspaper and magazine work, is sheet-fed. A great number of different types of presses come within this category, but for commercial job printing the three most important types in common use are:

- Hand-fed and automatic platen presses (Brandjen & Kluge, Inc., The Chandler and Price Co.);
- Hand-fed and automatic cylinder presses (American Type Founders, Inc.; Miehle Printing Press and Manufacturing Co.; Miller Printing Machinery Co.);
- Sheet-fed rotary presses (C. B. Cottrell and Sons Co., Goss Printing Press Co., Harris Seybold Potter Co.).

Important for packages and labels are the multi-color letterpress units (Champlain Corp., the C. B. Cottrell and Sons Co.; the New Era Manufacturing Co.; Weben-

dorfer Division of American Type Founders, Inc.) which will reproduce two or more colors in one printing operation. Many of these multi-color units are fed from a roll rather than by sheet.

Offset equipment

A number of different companies manufacture sheet-fed offset presses and these in several sizes. A recent comparative chart in the magazine, *Modern Lithography*, lists 35 different models currently being manufactured. Among those in common use for commercial work are the presses built by the Harris Seybold Potter Co., R. Hoe and Company, the Rutherford Machinery Co., and Webendorfer Division of American Type Founders, Inc.

Sheet-fed offset presses are also manufactured for the highest type of multi-color offset work. Standard models are available that will reproduce in as many as four colors in one operation.

Web-fed offset presses which operate at a very high production speed are now being used with increasing frequency for both single and multi-color offset work. Much of this equipment is built specially by the manufacturer to meet customer specifications. Among those specializing in this type of equipment are R. Hoe and Company, the New Era Manufacturing Co., and the Webendorfer Division of American Type Founders, Inc., among others.

Decoration on metal for containers is done almost entirely by the offset process. Special offset presses are required for this work because of the character of the material to be handled and of the process itself. Both single- and two-color metal offset presses are available, the more modern being equipped with automatic feeding devices. Manufacturers specializing in this type of equipment include the Apex Products Corp., the Bathrick and Palmer Machine Co., R. Hoe and Company, and the Rutherford Machinery Co.

Gravure equipment

An important development for packaging is the sheet-fed gravure press. These small gravure units are just coming

PACKAGING CATALOG

into their own and may be expected to take an increasingly active part in the production of commercial printing. Manufacturers of this type of equipment include the General Printing Machinery Co., the Harris Seybold Potter Co., the Hudson Sharp Machine Co., and the Rotogravure Engineering Co.

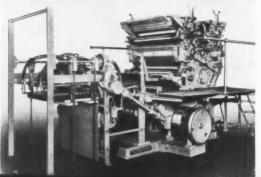
Web-fed gravure equipment is most commonly associated with the production of newspaper rotogravure supplements and picture magazines. However, gravure is finding steadily increasing opportunities in the packaging field because of the ability of these presses to use highly volatile inks and to apply lacquers and waxes. Many rotary gravure presses, such as those developed by the Champlain Corp., the Meisel Press Manufacturing Co., the C. B. Cottrell and Sons Co., and the John Waldron Co., have been specially built to meet the needs of the packaging industry.

Trends in package production

One of the outstanding trends in the imprinting and decoration of packages and in the production of package wraps and labels is undoubtedly that of steadily increasing speed of production. The number of products that are being distributed in large volume and over wide areas is constantly growing, and with this there is a cor-

7. Four-color cabinet model press prints and rewinds cellophane at the rate of 150 ft. a minute. Photo Champlain Corp. 8. Two-color rotary offset press for metal and tin can decoration equipped with automatic feeding device. Photo R. Hoe and Co.





responding growth in the size of production orders for containers and labels. To turn this work out quickly, and economically, straight-line production has become not only desirable, but also often essential.

Another outstanding trend in packaging is the increasing use of multi-color designs. Competition of containers for public attention on dealers' shelves, as well as the desire of manufacturers for individual identification of their merchandise, has done much to stimulate the demand for more and better color.

For both these reasons, there is a strong tendency for the big packaging jobs to be handled more and more on web-fed printing equipment, whether letterpress, offset, or gravure. The fundamental advantage of web equipment is that with the web of paper or other material under continuous control from feed to delivery, the material can be put through not merely one, but a whole series of manufacturing steps in one operation. Package wraps, for example, can be printed in 2, 3 or 4 colors, numbered, perforated, varnished-even specially imprinted with the distributor's name—then cut to size, and fed directly into the package wrapping equipment without interrupting the steady flow of production. Obviously, much faster and more economical production is possible under these conditions than if each of these operations had to be done separately by a different machine. A web-fed machine combines operations.

Since lithography and gravure adapt themselves more readily to a continuous web-fed operation than does letterpress, these processes are finding increasing use in the packaging field, particularly for long runs. Offset lithography has increased its usefulness by the development of the deep-etched offset plate which not only permits longer runs to be made from the same set of plates, but also improves the quality of the work done. Gravure printing has gained much favor because of its ability to deal easily with some of the recently developed fast-drying inks and lacquers.

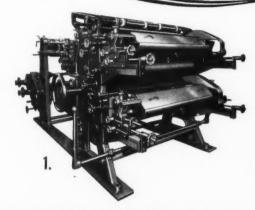
Several of the many interesting phases of package decoration, such as the printing of cellophane and other plastics, the decoration of metal foil, the use of heat embossing and other such devices for the improvement of the appearance of the package or container, are discussed in other sections of this Catalog. It must be emphasized here that problems in packaging need careful study and analysis before final decisions are made.

Today many manufacturers who deal in volume production are finding it advantageous to set up their own printing departments to imprint or decorate their containers. In such cases, the equipment used is usually built especially to do a particular job. When a manufacturer is contemplating the setting up of his own production unit, he would do well to consult with a number of equipment manufacturers before deciding upon the equipment to be installed.

Any manufacturer who wishes to have his packages done for him by an independent printer can consult the employing printers' organization in his locality for the names of printers qualified to handle his work on the basis most satisfactory to him.

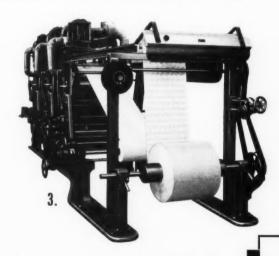
NILINE OR RAVURE

HIGH SPEED PRINTING PRESSES



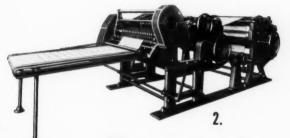
ROTOGRAVURE PRINTING PRESSES

Gravure presses for the needs of the industrial printer. Any number of colors, any desired width, fitted to meet the special requirement of the buyer.



- 1—Four color stack type printer equipped with rewinder and drying equipment.
- 2—Four color aniline press equipped with high speed sheeting unit . . . adjustable table for varied lengths. Where required, sheeter is built with layboy, jogger and low rater.
- 3—Three color rotogravure print press equipped with a rewinder and dryer.

ANILINE PRINTING PRESSES



The most complete selection of aniline equipment available to the industrial printer. Presses built to take any width of sheet, any number of colors, with color units carrying individual tympan rolls or with all colors contacting single tympan. Name your aniline printing problem and we will supply the ideal press.

AUXILIARY EQUIPMENT

Either aniline or gravure presses fitted with rewinders particularly adapted to meet printing problems involved. High speed sheeting equipment set in line with printers where required. Slitting equipment, drying equipment, lacquer and laminating units incorporated in all machines where specified.

HUDSON-SHARP

MACHINE CO . GREEN BAY . WIS

Printers, Embossers, Folders, Interfolders, Waxers, Laminators, Wrapping Machines, Core Winders, Packaging Presses, Crepers and Napkin, Toilet Tissue and Paper Towel Units.

PACKAGING CATALOG

Printing inks for packages

by David Donovan

HE ink requirements of packagers and package printers have always been most stringent. Considerations which do not concern the newspaper or magazine publisher, the poster printer, or the catalog producer, are vital to the packager. For example, the packager requires that inks to be used with food products be free from odor. Inks, at one time, were characterized by a distinctive odor arising from the vehicle and driers used in their composition. Frequently this odor was so prominent that it would contaminate food products even after long periods of drying and free exposure to air. Today, through the use of synthetic resin vehicles and through proper handling of inks, the problem of odor has been largely overcome.

A new ink, developed within the past year and used to produce bread wrappers, butter cartons, breakfast food packages, and other types of containers, is characterized by a remarkable freedom from odor.

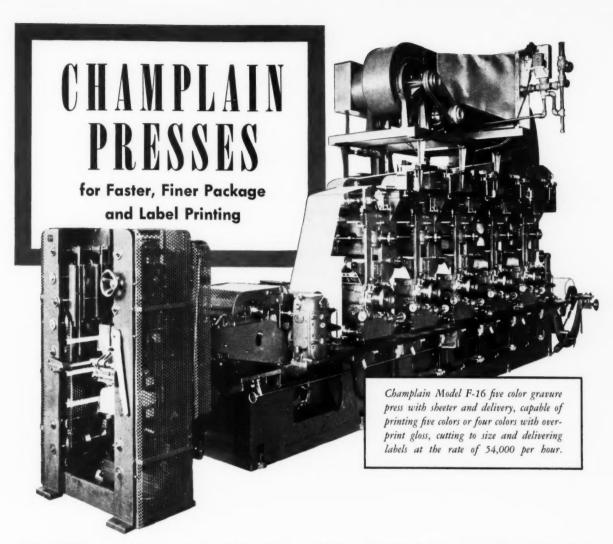
These inks set not by oxidation, not by vaporization through application of heat, but by contact with moisture. In most cases, steam is blown into the printed web, and in a few instances, a vaporized water spray is used. Drying is practically instantaneous, and the printed result is remarkably sharp and clean. The odor-free characteristic of these inks makes them ideally suited to food containers. Advantages in speed of production are also possible with these inks, and the long time for drying required in the case of bread wrappers, is avoided.

There are other special requirements that apply to ink for packages. These requirements depend, of course, on the particular package—the nature of the product it contains and the use for which the package is designed. Often, packages are used for display, as well as to protect their contents. In these cases, it is obvious that the inks must withstand sunlight and exposure without undue fading. This means that certain colors will have to be avoided, and it is partly the responsibility of the designer, as well as of the ink maker, to make sure that sunfast colors are used.

Certain packages and wrappers must be proof against any deteriorating ingredient which they may contain, or with which they may come in contact. Soap wrappers

This chart and the one on page 422 indicate ink developments over a period of 20 years. Note the increase in types of inks commonly utilized today and the introduction of rotogravure and aniline printing. Variations in printing conditions, caused lack of uniform agreement among production men concerning press speeds. Figures given are approximations.

		PRINTING PROCESSES IN COMMON USE		PRESS SPEED R. OR FT. PER MIN.	TYPES OF INK IN COMMON USE		
TYPE OF INK	OLD	OLD NEW		OLD NEW		NEW	
Metal lithography.	Sheet-fed offset.	Sheet-fed offset. Pre- formed container printing. Offset gravure.	1500 R.P.H.	3500 R.P.H.	Straight litho var- nish vehicle inks.	Natural and synthetic resin vehicles with tung perilla and linseed oils and heat-set inks.	
Paper lithography. No coated papers used prior to 15 years ago.	S. pet-fed offset.	Sheet-fed and web- fed offset.	1800 R.P.H.	4500 R.P.H.	Straight litho var- nish vehicles,	Natural and synthetic resin with tung, perilla and linseed oils and heat-set inks.	
Coated carton and patented coated board.	Sheet-fed letter- press.	Sheet and web-fed letterpress.	1000 R.P.H. sheet-fed.	2600 R.P.H. sheet-fed. 6000 R.P.H. web-fed.	Linseed oil and natural resin ve- hicle inks.	Natural and synthetic resins with tung, perilla and linseed oils. Aniline and heat-set inks.	
Fibreboard and corrugated carton stocks.	Sheet-fed letter- press.	Sheet-fed letterpress.	900 R.P.H.	2400 R.P.H.	Linseed oil and natural resin ve- hicles.	Natural and synthetic resins with tung, perilla and linseed oil vehicles. Aniline inks.	
Label stocks gum- med, C.I.S. and gloss.	Sheet and web let- terpress. (See off- set paper litho- graphing also.)	Sheet and web let- terpress and roto- gravure.	1800 R.P.H.	4500 R.P.H. sheet- fed. 900 Ft. per min. rotogravure.	Linseed oil and nat- ural resin vehicles.	Natural and synthetic resins with tung, perilla and linseed oil vehicles. Heat-set inks. Roto- gravure.	
Functional papers. Moisture - vapor - proof cellophane, glassine, glazed and laminated foil stocks.	Sheet and web let- terpress.	Sheet-fed and web- fed letterpress, roto- gravure and aniline printing	1000 R.P.H. and only glassine available.	2000 R.P.H. sheet- fed. 1600 feet per min. rotogravure.	Linseed oil and nat- ural resin vehicles.	Natural and synthetic resins with tung, perilla and linseed oil vehicles. Aniline, rotogravure and heat-set ink.	



CHAMPLAIN rotogravure presses offer printers many advantages which make possible faster production at reduced cost. The simplicity of the gravure principle eliminates make-ready and permits rapid changeovers and high flexibility in printing.

All Champlain presses are equipped with the patented Speed-dry enclosed ink fountain. With this device, the ink remains uniform; highly volatile solvents may be used without fear of evaporation in the fountain.

No splashing is possible, and the fountain protects the ink from foreign particles. Fast drying gravure inks provide press speeds that make for extremely economical operation.

No longer associated only with newspaper supplement and magazine printing, rotogravure is now widely used in the package printing field. Here is a partial list of items now being successfully printed by this modern method:

BEER LABELS, BOTTLE LABELS, CAN LABELS, CANDY WRAPPERS, CHEESE WRAPPERS, CIGAR WRAPPERS, CIGARETTE WRAPPERS, COFFEE BAGS, DESSERT CARTONS, FOLDING BOXES, GUM CARTONS, GUM WRAPPERS, MATCH BOXES AND FOLDERS, PHARMACEUTIC PACKAGES, RAZOR BLADE WRAPPERS, SOAP WRAPPERS, SUGAR TABLET WRAPPERS, TEA TAGS, THREAD LABELS, WAX PAPER CARTONS, WINDOWBOXES.

FREE BOOKLET. If you would like to know more about how to print containers economically and attractively by rotogravure, write to Champlain Division of Interchemical Corp., 636 11th Avenue, New York City. A booklet, "Advantages of Gravure for Package Printing," will be sent to you, free.

CHAMPLAIN DIVISION

OF INTERCHEMICAL CORP.

636 ELEVENTH AVENUE . NEW YORK CITY, N.Y.

PACKAGING CATALOG

must be printed with inks that are bleed-proof and unaffected by alkali. Inks for various containers for perfume and toilet goods must be alcohol-proof, otherwise they are likely to bleed and ruin an attractive package.

Often a container must be printed with inks of a most unusual nature. An example is flour and sugar bags with "washout" designs. These are bags printed so that after the contents are used, the owner can wash out the printed trademark and design and use the bag for dishtowels, curtains, or some other household appurtenance. For this purpose, inks have been formulated which remain bright and fast on the bag while it is on the dealer's shelves or in the kitchen—even if the bag becomes wet. But when it is washed with water and soap, the design washes out, leaving the cloth clean and white.

Resistance to abrasion is a basic requirement for inks to be used on containers. This has been a particularly important contribution in the carton printing field, where scuff-proof inks have greatly improved the appearance of packages on display. These abrasion-resistant formulas have been made possible by the use of the new synthetic resins.

In short, all of the special needs of the packaging field—individual needs for specific types of packages, or more general requirements—have been investigated by the research chemist. And, for all of these requirements there are specially formulated inks which make it possible to meet every reasonable demand of the designer.

Improvements in inks have brought important produc-

tion advantages to the packaging field. Notable among these has been the faster, cleaner printing made possible with the introduction of the heat-set type of inks. These inks have been used to print bags and wrappers at high speeds, since the ink dries instantly under application of heat, avoiding offset and smudging.

New aniline ink formulations have made great advancements possible in the printing of wrappers and bags. These inks, which are pigmented, are much more resistant to water-bleeding and to light than the old aniline inks, and make possible an improved quality of work.

The functional merits of the metal container, with its perfect resistance to the deleterious effects of light and air, its high resistance to mechanical shock and its tamper- and substitution-proof qualities, have long been recognized. It has only been recently, however, that the smooth, unbroken surfaces of metal containers have taken their proper place from a decorative standpoint. It is true that metal lithographing has long been practiced. Tobacco and talcum powder tins have been lithographed for years. Now metal containers of all types are being lithographed with a practically unlimited range of colors. A revolutionary change in inks for metal has been based almost entirely upon the substitution of synthetic resins for the oil vehicles of a few years ago. From a production standpoint, these new inks have effected advantages in ease of manipulation on the press, reduction in the drying time and improvement in the ease of handling the finished lithographed sheets.

TIME REC		ME REQUIRED FOR COMPLETE DRYING OF IMPRESSIONS		TIME REQUIRED NAL PROCESSING	ADHESIO RES	FINISH		
TYPE OF INK	OLD	NEW	OLD	NEW	OLD	NEW	OLD	NEW
Metal lithography.	20-30 min. bake at 250° F.	3 to 10 min. bake at 240° F. to 320° F. for synthetics. Almost instantaneous for heat-set type.	7 to 14 days.	1 to 12 hours.	Barely adequate.	Excellent	Poor	Excellent
Paper lithography. No coated papers used prior to 15 years ago.	12 to 24 hours. Coated paper racked out between im- pressions.	3 to 8 hours for synthetic and ordinary inks. In- stantaneous for heat-set types.	24 to 72 hours.	24 hours.	Fair	Good although need remains for improvement in scratch and rub resistance.	Poor	Good
Coated carton and patent coated board.	8 to 24 hours.	Instantaneous for heat- set and aniline inks. 6 to 10 hours for synthetics.	24 to 72 hours.	Instantly for aniline and heat-set to 12 hours for synthetics.	Fair	Good although need remains for further improve- ment in scratch and rub resist- ance.	Poor	Excellent
Fibreboard and corrugated carton stocks.	8 to 24 hours.	Instantaneous for aniline inks. 6 to 12 hours for more ordinary ones.	24 to 72 hours.	Instantly for aniline. 6 to 12 hours for syn- thetics.	Fair	Good although further improve- ment is needed,	Fair	Excellent
Label stocks gummed, C.I.S. and gloss.	8 to 24 hours.	Almost instantaneous for heat-set and rotogravure 6 to 12 hours for syn- thetics.	12 to 72 hours.	Instant to 24 hours.	Fair	Good although further improve- ment is needed.	Fair	Excellent
Functional papers. Moisture - vapor - proof cellophane, glassine, glazed and laminated foil stocks.	12 to 24 hours.	Instantaneous for heat- set aniline and roto- gravure. 6 to 12 hours others.	12 to 36 hours.	Instantaneous to 12 hours.	Fair	Good although improvement is needed.	Fair	Excellent

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The principle of lamination for added protection is as important in packaging as it is in bullet-proof glass. The effect is similar, too—in one case it's bullets that are kept out, in the other it's germs, dangerous moisture or dryness and other deteriorating influences.

In both forms, lamination is playing an important role in national defense. Laminated cartons, boxes and wraps are protecting the essential foodstuffs of the nation—as vital a job as protecting the nation's army from enemy gunfire.

Incidentally, lamination is beautiful: lends high gloss, depth, good looks and sales appeal to the products it protects. (We wanted to laminate this page to show you, but we felt that it was more important to conserve this material for National Defense and more essential applications than to put any of our production capacity to a promotional purpose.) We do custom laminating of cellulosic sheet, as well as the lithographic decoration underneath. We are noted for fine work on both counts. We'll be glad to show you.

HOLES and McCLELLAN

100 Northfield Road

Bedford, Ohio



O understand coating materials, it may be interesting to trace briefly their beginnings. The word "lacquer" is derived from the Hindustani "lakh," meaning 100,000. It was originally given because of the thousands of insects whose resinous secretion was and still is the basis of many shellars and natural gums.

Applying a protective or ornamental lacquer finish to wood, paper, metal or fibre is not new. It has been an art for centuries in China.

Whether a protective coating is classified as a varnish or a lacquer depends upon its method of drying. A lacquer dries purely from the evaporation of volatile solvents from the solution. A varnish dries chiefly by a chemical reaction known as oxidation.

Spirit varnish, therefore, can be really classified as a lacquer, but it is more like the lacquers used centuries ago than those classified as lacquers today. The latter are for the most part solutions of various gums and resins in alcohol.

The value of these spirit varnishes is due chiefly to their quick drying qualities and low cost. In most instances, where only a limited amount of protection is desired, these spirit varnishes are adequate. However, they have indubitable faults, such as a tendency to soften in warm weather and to crack in cold. Resistance to abrasion is sadly lacking.

Thus, it is not surprising that development of new synthetic materials, such as rubber derivatives, vinyl, methacrylate resins and cellulose derivatives are looked upon by the packaging industry with keen interest. In these new materials are new ideas and trends, new style, new methods, new beauty and new protection previously unknown. Applications of overprints are no longer being made merely for the sake of enhancing the appearance of a package or wrap, but also to incorporate such protections as resistance to oils, moisture, acids, alkalis and to the elements. In most all cases, the new materials give a good-looking finish, so that their effect on appearance is taken for granted and is subordinated to their protective properties.

Today many liquids and oils are being packed in paper containers. Many industries are effecting economies by the use of coated papers. Coatings have been used to protect whiskey labels from the effect of alcohol—soap wraps from discoloration and fading due to alkalis—oil labels from being stained by the oil—salt and cocoa from becoming caked by moisture in their containers.

One distinctive advantage of these new synthetic resin materials is their ability to seal with the aid of heat and pressure. Speed in production is increased greatly since the seal sets as soon as the temperature at which the seal was made drops a few degrees. Their bonds are stronger, more flexible, water-proof and do not deteriorate with age.

These rapid strides in the development of the new resins and their uses in packaging have been brought about by carefully planned and directed research. Traditional methods are becoming "has beens." Wideawake and alert companies who desire to keep up with these modern trends cannot afford to overlook the new possibilities which these materials offer to industry.

Chemical properties of new coatings, showing their resistance to various characteristics of many packaged products.

	Cyclicized Rubber	Chlorinated	Vinyl	Polyvinyl	Acrylic Resins	Nitro	Cellulose	Ethyl Cellulose
	Rubber	Rubber	Copolymer	Acetate	Resins	Cellulose	Acetate	Cellulose
Acids Weak	excellent	excellent	excellent	good	good	fair	fair	fair
Acids Strong	excellent	excellent	excellent	good	good	poor	poor	poor
Alkalis Weak	excellent	excellent	excellent	good	good	poor	poor	excellent
Alkalis Strong	excellent	excellent	excellent	good	good	poor	poor	excellent
Salt Spray	good	good	excellent	good	fair	poor	poor	fair
Alcohol	excellent	good	excellent	poor	poor	poor	poor	poor
Gasoline	poor	poor	excellent	good	fair	good	poor	poor
Mineral Oil	poor	poor	excellent	good	fair	fair	good	fair
Vegetable Oil	poor	poor	excellent	good	fair	poor	good	poor
Animal Oil	poor	poor	excellent	good	fair	fair	good	poor
Essential Oil	poor	poor	poor	DOOP	poor	poor	good	poor

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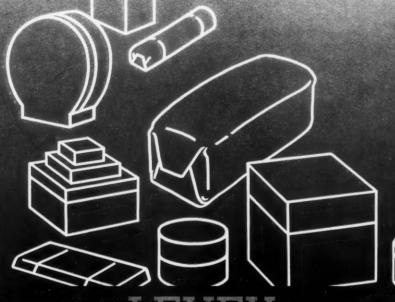
PACKAGING ENGINEER

appearance and of atmost practicality. You have created an entirely new sales appeal by making each package an individual salesman with an invitation for the eye and mind of the consumer. You have increased the advertising value of innumerable packages; you fill packages faster. As a result of your efforts foods and drugs are kept clean and sanitary, without deterioration over long periods.

Truly all of this is a monument to you, the Packaging Engineer.

We, in the Levey Company, doff our hats to fellow engineers who made these achievements possible. We, too, are engineers familiar with the mechanical as well as the chemical problems of printing. We gladly cooperate with high speed development, whether it be Gravure, Letterpress, or Offset. As the creators of Flashdri and engineers who have built auxiliary drying equipment for hundreds of presses, we solicit the opportunity to work with you toward the new horizons that you visualize.





FRED'K H. I.FVFY CO., INC.

Makers of Fine Printing Inks Since 1874

PHILADELPHIA

NEW YORK

CHICAGO

BROOKLYN . CINCINNATI . MONMOUTH JUNCTION, N. J. . SPRINGFIELD, O. . DAYTON . SAN FRANCISCO . CHATTANOOG

PHYSICAL PROPERTIES										
	Cyclicized Rubber	Chlorinated Rubber	Vinyl Copolymer	Polyvinyl Acetate	Acrylic Resins	Nitro Cellulose	Cellulose Acetate	Ethyl Cellulos		
Specific Gravity	1.07	1.57	1.35	1.20	1.18	1.65	1.27	1.14		
Specific Volume, In.3/Lbs.	26.0	16.98	20.6	24.2	23.3	16.26	20.2	23.91		
Color	very light	light brown	water-white	water-white	water-white	very light	water-white	very light		
Odor	none	slight	none	none	none	none	none	none		
Taste	none	none	none	none	none	none	none	none		
Flammability	none	low	none	none	none	high	none	low		
Heat Seal	excellent	poor at high temp.	excellent	excellent	excellent	fair	fair	good		
Resistance to Aging	fair	fair	excellent	excellent	excellent	poor	excellent	excellent		
Water Resistance	very good	very good	very good	poor	good	fair	poor	poor		
Water Vapor Imperme- ability	excellent	excellent	good	poor	fair	good	poor	poor		
Toxicity	none	none	none	none	none	none	none	none		

Physical properties of the new materials particularly important to those who use these new synthetic coatings.

A brief résumé of the new materials, their method of manufacture and uses for packaging follows:

Rubber derivatives

Rubber in one form or another has always been used for water- and vapor-proofing. However, its high viscosity, residual tack, lack of transparency and its general difficulty in handling have made it practically useless as a protective coating for paper. Through modern methods of research, a resin has been developed from a very high grade of rubber, which can be handled very much like any other coating solution adaptable for application to paper. Moreover, this resin, which is a cyclicized derivative of rubber, is an improvement over the raw rubber in water- and vapor-proofness. It is soluble in a variety of aromatic and aliphatic hydrocarbons and leaves a clear, glossy, transparent, heat-sealing film highly resistant to moisture, acids, alkalis and alcohol. It contains no chlorine.

Another rubber derivative very suitable for use as a paper coating is a product known as chlorinated rubber or rubber chloride. It results from the reaction of chlorine on rubber in which the chlorine content may vary from 61.5 per cent to 68 per cent. The theoretical calculation of the chlorine content is generally higher than the practical since crude rubber is made up of a soluble portion which is very reactive and a gel portion which is much less reactive.

Both these above-mentioned rubber derivatives are extremely useful as a protective coating where good resistance to moisture penetration, acids and alkalis is desired. They can be formulated to produce good, flexible films with good gloss retention. The cyclicized rubber derivative, however, is more suitable for heat-sealing purposes, since it is more stable to heat than the rubber chloride and is produced in various grades with various melting points. Both of these

materials are not affected by alcohols, but are attacked by gasoline. Their use on glassine or other hard surfaced papers has given results which make these coatings extremely useful in packaging where high moisture resistance is required. On glassine paper, the cyclicized rubber derivative is used with as little as $1^{1}/_{2}$ lbs. per 3,000 square feet of solid coating on each side of the paper to give moisture vapor transfer rates of from 1 to 5 grams of water per square meter per 24 hours at a relative humidity differential of 100 to 0 per cent, compared with the uncoated paper, which has a moisture vapor transfer rate of over 1,000 grams per square meter under the same conditions. This same cyclicized rubber derivative is also used on kraft paper to give a high strength sheet which is very resistant to the passage of moisture. This sheet has a high finish, is heatsealable, and offers many opportunities for using high strength paper in the field of large commodity bag

The outstanding advantage of these coatings is that they are non-toxic and usable for food packaging where high moisture resistance is required to prevent caking of such items as salt and cocoa or to prevent staleness of biscuits, corn flakes, potato chips, pop corn, etc.

The chemical resistance of these rubber derivatives allows for wrapping and packaging of such materials as soaps and detergents and prevents discoloration of the wrap by the alkalis.

Vinyl polymers

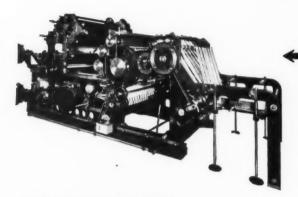
Vinyl chloride and vinyl acetate are formed by passing acetylene through hydrochloric acid and acetic acid, respectively. The molecules of these compounds are possessed with the characteristic of joining together with other like molecules to form larger molecules possessing the same empirical composition. Thus, when vinyl chloride and vinyl acetate are each treated with

MEISEL

PRESSES SLITTERS SHEET CUTTERS



MACHINES FOR LAMINATING LABEL DIEING



PRESSES

We build both rotary and bed and platen printing presses. These presses print from typographical plates both metal and rubber as also by offset and rotogravure systems. The multioperation rotary presses are built as fixed size, adjustable, all-size, and variable. These are patented. Several operations can be performed in one passage through the press.

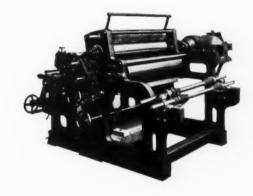
LAMINATING MACHINES

The laminating machines we build vary in size and weight to suit the materials to be combined. Hot asphalt as well as liquid adhesives and latex are used.



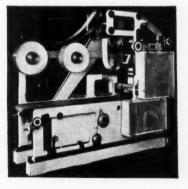
SLITTERS

Our models of slitters range from small to large and use the type of cut suitable for the material to be converted. Unwinds, rewinds, and drives vary to suit the models.



SHEET CUTTERS AND LABEL DIEING

The cutting of paper into sheets or into variformed outlines is done by an assorted group of machinery. Some do the cutting in connection with other operations. Maximum accuracy is maintained.



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catalysts, they each polymerize to form polyvinyl chloride and polyvinyl acetate, respectively. This chain reaction can be controlled to various degrees of polymerization and the degree of polymerization determines the average molecular weight, as well as some of the important properties of the polymer.

Polyvinyl chloride is strong in tensile strength with good chemical and water resistance. However, it has poor solubility in most organic solvents and is, therefore, limited in its use for a surface coating.

Polyvinyl acetate, on the other hand, has properties which are quite different. Its softening point is as low as 30° C. and it has a high water absorption and tacky nature. It is more useful, consequently, as an adhesive rather than a surface coating.

A joint polymerization of these two compounds simultaneously, however, with a content of about 85 per cent to 87 per cent vinyl chloride yields a product which is soluble in many organic solvents suitable for use as a medium for adapting the resin for surface coating. What actually happens is that the vinyl acetate, when polymerized together with the vinyl chloride, internally plasticizes the polyvinyl chloride while retaining most of the properties of the polyvinyl chloride.*

A large variety of compounds can be made with varying properties by the copolymerization of these two materials, by controlling the average molecular weights and by altering the vinyl chloride-vinyl acetate ratio.

Vinyl resins of this nature find their most extensive uses in paper coatings where good resistance to acids, alkalis, oils, gasoline and alcohol is required. They have already found successful application in paper liners for bottle caps, fibre containers for holding oils, fibre cartons used for packing nitrocellulose which is kept wet with denatured ethyl alcohol, labels and box papers for improving the appearance as well as for resistance to the above-mentioned materials.

Vinyl resins in general have excellent heat-sealing properties, water resistance, are non-toxic, odorless, tasteless and practically water-white. This makes them ideal for use in food containers and wrappings. They have been used for packaging dairy products, such as butter, cheese and on hoods for milk bottles.

The vinyl acetate polymers have extremely high thermo and cold adhesive qualities, and are quite extensively used as adhesives in the packaging field. They, too, are non-toxic, odorless, tasteless and colorless, but the water absorption is rather high. However, water does not dissolve polymerized vinyl acetate. This type of resin is used for sealing paper milk containers, paper drinking cups for both hot and cold liquids, as well as a seal for cellophane and cellulose acetate film. It can be coated by the regular methods and it makes excellent heat-sealing papers.

Methacrylate resins

The methacrylate resins also belong to the vinyl group, chemically speaking, and are made basically from coal,

* These copolymers of vinyl acetate and vinyl chloride are manufactured and sold under the name of "Vinylite."

air, water and petroleum. These resins are made from various esters such as ethyl, methyl, butyl and isobutyl derivatives. To date, the most extensive use for acrylic resins has been in molding. However, they are soluble in a large variety of solvents and are suitable for coating. The ethyl methacrylate, however, is probably the best suited for this work, since the methyl polymers which are used chiefly in plastics are too hard and brittle for coating. The butyl polymers, moreover, are too soft and sticky. The acrylic resins are water-white, thermoplastic and have good resistance to water and inorganic chemicals. They have not been fully explored as yet in this particular field, in as much as they have been very costly.

Polystyrene resins

Polystyrene resins also known as vinyl benzene have ideal potential properties for protective coatings. However, their one drawback is their hardness and lack of flexibility. Formulating chemists spent many hours trying to make a usable, flexible polystyrene coating.

Cellulose derivatives

Nitrocellulose, ethylcellulose and cellulose acetate have also been used to a great extent for coatings of paper. However, their usefulness is much more limited than the other mentioned thermoplastic, high molecular weight, film-forming resins. Good moisture-resistant nitrocellulose lacquers and fair oil-proof cellulose acetate, as well as good thermoplastic coating from ethylcellulose, have been made. However, these materials do not have as many inherent physical and chemical properties as do the thermoplastic resins. They have to be modified in so large a measure by other ingredients that, in many cases, they lose their advantages. In paper work, these materials have found large uses in coated labels and fancy box papers. Moisture-proof nitrocellulose lacquers have been used on both cellophane and glassine with good results. The one outstanding disadvantage of nitrocellulose lacquers is their high rate of inflammability. This requires extreme care in handling and storing.

In general, all coatings mentioned give good scuffproofness and good gloss, which enhance the appearance and serviceability of the package.

The thermoplastic type of materials is best suited for heat-sealing work and bags can be made and sealed only with heat and pressure. In general, temperatures of approximately 300° to 400° F. are required.

The statements above are all relative and general. The efficiency and advantage of any of the mentioned materials will depend upon the precise development by the lacquer manufacturers of these materials for particular uses. In application, the lacquers made from these new synthetic bases vary little from the conventional methods of coating. However, certain facts must be taken into consideration if the best protection and appearance are to be obtained. First, let us consider

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briefly some of the established methods of application, their shortcomings and the modern trend to improve these methods.

Coating in sheets is generally accomplished on a socalled varnishing machine, which consists of a reservoir in which the liquid is poured. Running in this reservoir is a distributing roller with an attached doctor roller, which regulates the amount of coating to be applied to the sheet. The sheet is drawn over the distributing roller by means of a large revolving drum equipped with grippers. These grippers hold the sheet firmly to the drum as it revolves. At the same time, they draw the paper over the distributing roller with the regulated amount of coating. The sheet picks up the coating, is then released on an endless belt and carried through a heated oven to be dried. See Fig. 1.

Although this type of equipment has served the industry successfully for years in applying spirit varnishes chiefly for good appearance without much damage, a little more careful handling and thought to details must be given if coating by this method is to be used successfully for protective application. Like the chain with its weakest link, the protective quality of the finished product is only as good as the continuity of its film.

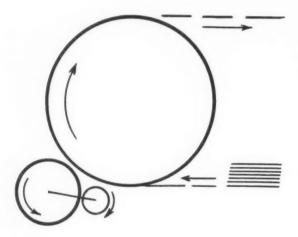


Fig. 1. Diagram of varnishing machine for sheet coating.

Pinholes, bare spots and not enough coating render the sheet useless from this point of view.

The machines have been modified to the extent of varying the speeds of the distributing roller, so that the sheet wipes against the roller instead of kissing it. The modification tends to eliminate any streaks in the coating and to provide for more uniformity and a wider range of thickness control. Another modification has been to reverse the distributing roller in such manner that it runs in the opposite direction to the motion of the large drum and the sheet and thus lays down a smooth streakless coat. This is, perhaps, the best method. However, since the operating details have not as yet been satisfactorily worked out, more information is not available at present.

The second method to be discussed is the reverse roller coating equipment, of which there are several different types for production in the web or roll, rather than sheet. At present, there is no question about the merits of this type equipment. With these machines, accuracy and uniformity can be obtained satisfactorily without much difficulty.

One reverse roller type of machine consists essentially of a roller about half submerged and operating in a tank filled with lacquer. The paper runs over this roller in the opposite direction to its motion, picks up the lacquer and is carried between two rollers attached in wringer fashion. One of the rollers is stationary and revolves in the direction of the paper. The other roller is adjustable and operates in reverse direction to the movement of the paper. To the adjustable roller is attached a doctor blade which wipes down the excess lacquer which is picked up from the paper. Very accurate results for the weight of coating can be obtained from a machine of this type. In fact, actual calculations of the amount of coating to be applied can be determined before operation starts. See Fig. 2.

Another popular type of reverse roller coater has a roller operating in a lacquer bath. To this roller is attached a distributing roller, which picks off the lacquer from the roller in the bath. To the distributing roller are connected two adjustable auxiliary rollers at approximately 90° from one another. One of these auxiliary rollers has a doctor blade attached to it, operates in reverse of the distributing roller and regulates the amount of lacquer on the distributing roller. Between the second auxiliary roller and the doctored-off portion of the distributing roller, the paper passes also in a direction opposite to the rotation of the distributing roller. See Fig. 3.

Rotogravure printing is also being used to apply lacquers to paper in web form. Recently presses have been designed with closed fountains, which are ideal for lacquer work. However, rotogravure applications of lacquer for protective work have limitations: first, in the amount of coating applied and second, in the continuity of the film. The lacquer is applied by means of etched rollers. Caution must be taken with the formulation of the lacquer to be sure that it flows out to a uniform film before drying.

After the lacquer is applied, the sheets or web pass through a heated oven. These ovens are generally 30 to 40 ft. long and are constructed of sheet iron lined with asbestos. The source of heat is either the open gas flame, steam coils, hot air or, more recently, infrared lamps. Of all these, the open gas flame is the least desirable, since it affords a definite fire hazard when used with lacquers.

Although many of the lacquer bases are non-inflammable, the solvents used in them will flash at relatively low temperatures. The other types of heat are safe and, with such other necessary precautions as adequate ventilation, static control and proper electric equipment, little is to be feared from the fire hazard.

A recent innovation in designing ovens has come

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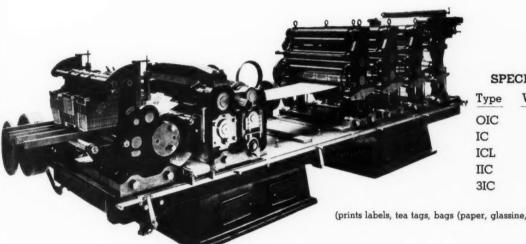
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about by the use of synthetic coating materials. It has been found that thermoplastic compounds will flow out when sufficient heat is applied to make them melt. Since the heat required to bring about this change of state is generally high enough to scorch the paper, the heat is applied only for an interval of 5 to 10 seconds, depending upon the amount of heat used. In most cases, about 400° F. is used for 5 to 10 seconds after the heated sheet has passed through the regular oven at 150° to 200° F. The result of this flash bake is a beautiful, smooth, high gloss finish on the paper.

With infra-red lamps, no ovens are required, since the air is not used as a medium for conveying the heat energy. Infra-red lamps give off rays which are not absorbed by air. The efficiency of this method, however, depends on the material being heated. That is, such material has the ability to reflect or transmit rather than to absorb these radiated rays, no amount of drying time will be adequate. However, if it does have the ability to absorb these rays, excellent drying facilities by this method can be arranged. Paper absorbs only a small amount of these rays, especially if the paper is white, and it is believed to be an impractical method of drying lacquers efficiently on paper.

The selection of the proper grade of paper is of vital importance to obtain maximum results. A grade of paper not suited for lacquering is extremely costly and the results are inadequate. Too much emphasis cannot be placed on the selection of paper stock. In considering paper for a protective lacquer, it must be remembered that it is only the film formed above the fibres that gives the most effective protection. Consequently, it goes without saying that papers which allow the least amount of coating to penetrate into the surface of the sheet are best.

A convincing illustration of this fact was demonstrated in work with moisture-proof lacquers. In an application of approximately $1^1/2$ lbs. of solids on each side of a glassine sheet over a 3,000-sq. ft. area, a series

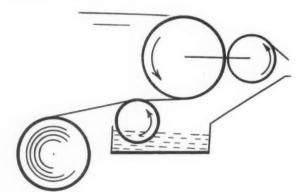


Fig. 3. Another type of reverse roller coater has a roller, operating in a lacquer bath, attached to distributor.

of readings were obtained between 0 to 5 grams of moisture vapor transmission per 24 hours per square meter. In an application of coating to a paper stock that was picked at random, but which was being used for lacquering, readings were between 50 to 60 grams of moisture penetration. It wasn't until about 3 to 4 lbs. of coating were applied to each side that favorable readings were obtained for the paper picked at random. Furthermore, an additional amount of coating on the glassine

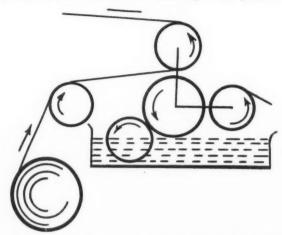


Fig. 2. Reverse roller type coater has a roller about half submerged in a tank which is filled with lacquer.

sheet gave no better results than the initial amount stated above. Thus, there is a limit to the amount of protection you can get and this maximum limit can be obtained much quicker and at a greater saving with the proper paper. It is much cheaper to treat a paper properly in the mill for good lacquering results than to apply an excess of lacquer to make up for the deficiency of the paper.

Paper to be used for lacquering should have a hand surface free from pores, grooves and standing fibres. In most cases, a supercalendered sheet or a coated sheet produces the best results. The coated sheet is superior, however, to the supercalendered sheet, inasmuch as there is less penetration into the paper. However, great care must be used in the selection of a coated stock. The coating should be hard but flexible, since the lacquer film will crack if the paper coating cracks upon flexing.

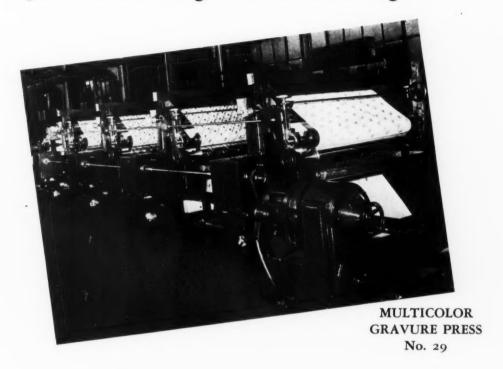
In buying competitive lacquers the purchaser should obtain the following salient facts in order to evaluate them on a dollar-for-dollar basis:

- 1. Knowledge of what you want the lacquer to do.
- 2. Weight per gallon.
- 3. Percentage of solids per gallon.
- Specific gravity of solids or how far it will go per unit of thickness.

Lacquers, in many cases, can be formulated to give you the best results for certain types of protection. It takes much less lacquer to do the best job, if you select one specifically designed. Knowing the weight per gallon, the percentage of solids and the specific gravity of the solids, you will be able to evaluate the cost of competitive lacquers—assuming, of course, that their properties are equally as good.



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Coating, laminating, and embossing equipment

by F. W. Egan

N addition to the printing of paper or board, there are three methods of converting them—coating, laminating, and embossing—available to the manufacturer who wishes either to enhance the appearance or to increase the protective qualities of labels, wraps, inserts, covers, containers, and boxes.

Coating

Paper may be coated for either protection or decoration. Decorative coating is used on paper that is to be imprinted or that depends upon a high gloss to give it a special finish. The protective type of coating means a finish that protects the surface of the paper or protects the contents of a package where it is used as a wrapper.

There are various types of coating machines, such as brush, roll, knife, and spray. The choice of machine to use will be determined by the type of coating. Coatings that might show brush marks can be applied better by a roll knife coater. Those with a tendency to rib, i.e., coatings with a high surface tension, can be handled by a roll coater. A spraying machine can be used to advantage on rough surfaces, but it has a tendency to dry the coating material during the spraying operation.

The best printed effects are obtainable on clay coating because mineral substances present a fine surface for printing inks. Clay coating may be applied to paper with a brush and then brushed out. As this method is limited in speed, other means of applying clay coatings

are used. Both direct and offset printing, air brush, and spraying can be used on this surface.

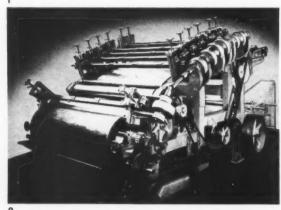
For the protection of food, coatings of lacquer and rubber derivatives are used and are most popular where packages are to be heat-sealed. The rapid advance made in the manufacture of these coatings has necessitated improvements in coating equipment. Varnishes are also used to coat papers for the protection of foodstuffs. They are applied by either the reverse-roll type of coating machine or a knife coater. The reverse-roll machine will successfully handle coatings with a solid content up to 50 per cent; whereas a knife coater can handle a solid content of 70 to 75 per cent. This latter type of unit has equipment specially ground for the application of different fine coatings.

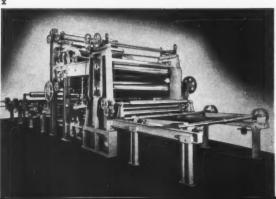
Laminating

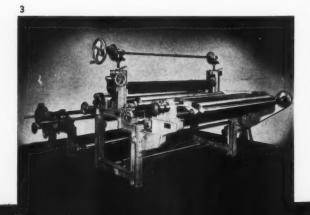
Laminating was formerly done on a paper machine, and the product was known as *mill-lined*. The combined web was passed around steam dryers and the best effects now obtainable from the laminating operation were frequently lost. It is now possible to combine without dryers, which permits flexing the board and lessening the rigidity that is often required in a combined web. When paper is laminated to paper or to board, the combined web should go directly from the laminator to the cutter in order to reduce mechanical curl to a minimum. If the combined web passes around any dryers, or is rolled, the sheets cut from this roll or web will always have some mechanical curl.

To reduce wet curl, adhesives high in solids are used, in straight-face, ground, large-diameter paste rollers which will apply a skin of adhesive having a high tack. The bond may thus be made in a single nip, and hold because no further pressure is applied. When additional nips are necessary, the large-diameter rollers in the laminator produce a semi-calendering effect.

1. Seven-brush arch bed coating machine for clay coatings. 2. High-speed laminating machine for laminating three, four or five plies at a speed of 600 ft. per minute.
3. Specially designed knife coater used for applying high solid lacquer type coatings. Photos John Waldron Corp.







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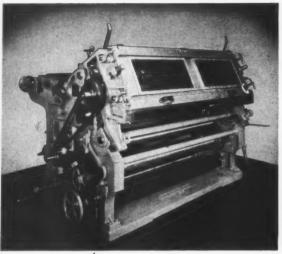
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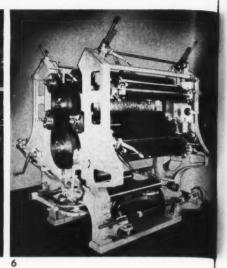
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4. Reverse roll coater for applying lacquer and varnish coatings. These types of machines are used especially for coating papers for protection of foodstuffs. 5. Special hot melt laminating machine. This type machine used for the application of such adhesives as rubber derivatives which carry wax. 6. Print type embossing machine with four printing units. With this type, ink is laid on embossing pattern of engraved roll and transferred to surface of paper as embossing is pressed into it. Attachments for inking may be placed on a machine of this type to obtain different effects. Photos John Waldron Corp.

Chilled iron rollers are now used instead of steel or rubber-covered rollers. They produce a combined web with a finished surface that will take printing readily, and reproduce the fine lines of rotogravure printing.

For the laminating of three to five webs, a high-speed laminating machine may be used. Such machines, which can be run up to 600 ft. a minute, are being built in widths up to 100 in. or more. Electrically operated quick-lift rigs are used for lifting the top laminating roller, and the backing rollers and doctor units in the paste sections. The paste sections can handle wax, starch, silicate, or asphalt adhesives. For the application of special adhesives, such as wax-carrying rubber derivatives or other compounds, a hot-melt laminating machine may be used. Special heating elements for bearings and frames are required as enclosures with this.

If only two webs are to be combined, a small two-ply laminating unit will turn out an excellent product. This type of machine, which is of simple construction with all parts accessible, is much used for applying varnished papers to pulp board and cork. These sheets are used as lining for caps on glass containers of preserved foods.

Laminating machines are producing sheets in which several webs of chip are combined, and finished off with liners of news litho, glassine, or acetate webs. They are also being used for the combining of metal foil or cellulose fibre to paper and board.

Embossing

Paper or board may be made more attractive by embossing, which adds depth and tone to a printed surface. This treatment tends to soften paper and is occasionally used to break paper that tends to curl from any cause.

Where strength is required, therefore, an embossing operation would not be recommended.

For the embossing of paper or board, a hydraulic machine offers many advantages. Since the rollers are mounted in sub-frames, they can be quickly removed. This permits an operator to use one frame with several sets of rolls.

Most designs can be embossed without difficulty. Some designs offer a problem because the varying depth of the engraving makes the winding operation difficult. Hydraulic embossing units produce a uniform pressure across the face of the roller and turn out a uniformly embossed web. An interesting combination is *print embossing* in which the ink is laid on the embossing pattern of the engraved roll and transferred to the surface of the paper as the embossing is pressed into it.

Inking attachments can be mounted on the embossing machine. The ink is either laid in the low spots of the embossing, kissed on the high spots (for shadow effects), or applied in varying combinations of the two. Still another effect can be obtained by applying ink to the surface of the paper as it passes around the paper roll. Ink-embossed effects in multi-colors are used to advantage on stocks for labels, catalogs, or covers.

Another method of embossing is obtained by running an engraved roller in contact with a paper roller without gears. The paper roller is moved from side to side in the machine to iron the surface of it. Thus a flat-back embossed effect is obtained. The paper stock is embossed only slightly, but it is attractive for art work, stationery, greeting cards, and favors. Boring the steel engraved roll helps to bring out good effects in sharp relief and also to speed up the output of an embossing machine.



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HE ever-expanding field of modern packaging imposes on the packager the need for great versatility in his approach to the question of adhesion.

The formulation of adhesives is the responsibility of the technical and research laboratories of responsible manufacturers, but a proper perspective of the types and functions of adhesives is required of the user.

The following discussion on Types and Functions of Adbesives reveals the fundamental objectives to be fulfilled in every class of job, gives a coordinated picture of the entire field of adhesives, and shows how these are correlated with the packaging materials. It also supplies brief practical instructions well suited for check-up in production work in order to obtain the most value from a given product.

Each section is aimed at practical considerations; yet to be practical, it is necessary to go into principles which though they may seem somewhat academic are in reality the strategic factors that form the basis for the effective use of adhesives. It is in this light that the material should be considered.

Basic definitions

A. What is an adhesive?

The definition of an adhesive is not so simple as might first be imagined, but a definition will focus attention on significant factors which are frequently overlooked.

An adhesive is a material available in a viscous liquid or soft plastic condition for purposes of application, and capable of changing subsequently to a semi-solid jelly or glass of high cohesion and adhesion to the surfaces.

B. What constitutes a good adhesive bond?

A good bond between two surfaces requires, in general, that the fabric of the material be torn or lifted when an attempt is made to pull the surfaces apart. This is naturally relative, and depends on the materials treated. Since the fibres of certain papers are easily torn, the adhesives may be low in tensile strength and still give a fabric-tearing bond; whereas the same adhesive, used between two pieces of bond or parchment paper, may fail at the adhesive bond because this is the weakest point.

In short, for a fabric-tearing bond, the strength of the adhesive (both cohesively and adhesively) should just exceed that of the material bonded. This explains why a glue for furniture, for example, has to be stronger than a paste for labels.

What all adhesives have in common

Examining the definition given above, it is obvious that all adhesives go through the following cycle:

At application (for Activation, or Pre-Bonding)	In final bond
usually in gluing mechanism	after fully adjusting itself to room conditions
Liquid or Soft Plastic, changing to Has flow	(Semi-) solid

It must be clearly recognized that while an adhesive starts out as a fluid material in order to permit its being applied in thin films by the gluing mechanism, it tends to become, even in the glue pot, what it must ultimately become after fully adjusting itself to room conditions, i.e., a (semi-) solid in order to give a good bond.

The ease or awkwardness of the application will be determined by the rate at which this change from the liquid to the (semi-) solid state occurs in the gluing mechanism when operating under room conditions. Naturally, this is controlled jointly by the type of adhesive and the gluing mechanism.

All adhesives at the time of application have in common the ability first to wet the surface to which they are to adhere. This not only spreads a thin, continuous film, but also probably establishes the affinities that effect the bonding.

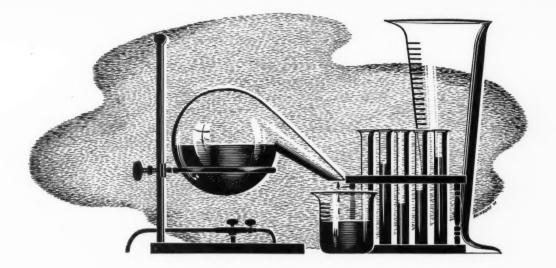
All share the need to preserve some measure of continuity in the film of glue across the surfaces to be bonded. This means keeping surfaces in contact with the active film of glue. Further, in the case of porous or absorbent surfaces, it necessitates controlled penetration of the adhesive into the surfaces, that is, the properties of the adhesive must compensate for or counterbalance the properties of the surfaces. It also implies that the adhesive should not be a crystalline but rather a colloid type of material.

The use of any adhesive implies continuity and integrity in the surfaces being bonded. Naturally, it is impossible to stick a gummed label to a surface of sand; and it is just as futile to attempt to bond anything to a paper surface covered with a loose clay coating. Loosely bonded overcoats or glossy coats on paper also seriously impair the chances of adhesion to this treated face.

Types of adhesives and their characteristics

The simplest classification of adhesives is based on the mechanism by which they change from the liquid or semi-liquid state needed for application, to the solid or semi-solid state needed for the ultimate bond. Thus considered, they fall into two classes:

A. Solvent adhesives: Made liquid or semi-liquid by the presence of volatile liquids used to dissolve or



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suspend the adhesive ingredients. As these volatile liquids must ultimately diffuse through the stock and volatilize in the air at least one of the two surfaces being bonded must be vapor-permeable by these liquids.

B. Cements: Those types of adhesives which change from the liquid to the semi-solid state without loss of solvents. These can set on non-porous or vapor-proof

Table 1 gives a development of this classification which includes the range of commercial adhesives available today.

Features of these basic classes are:

A. Solvent Types: Since these contain a volatile liquid (which ideally plays no part in the final bond), besides permeability of one face, they possess the following characteristics:

They shrink on drying from loss of the volatile liquid. This is so marked in many cases that at least one of the surfaces being bonded must be pliable and free to follow the shrinking film of glue. Where the surfaces are rigidly separated the force of the shrinkage often disrupts the film of glue, thus leading to failure of the bond (so-called

crystallization'

2) The adhesives must be stored and used within the temperature range where the solvent is liquid. This means for aqueous glues that freezing should be avoided; and that where used hot the maximum temperature in commercial operations should be well below the boiling point of water.

The body may be varied by regulating the amount of solvent. Therefore, to control penetration, the dilution must be held within certain limits.

When dry, they often may be re-activated by addition of the solvent, especially where the latter acts as a true solvent. This is both an advantage, in the re-moistening of the adhesive, and a disadvantage, in possible sensitivity to vapors of the solvent, in blocking, or damp stock.

These solvents or other liquid ingredients of a (liquid) adhesive may have adverse action on substances in contact with their surroundings (stock, ink, etc.); or affinities may exist between certain (usually liquid) ingredients of the adhesive, and of the stock, which over a protracted period (aging) may lead to a harmful result to one or the (This will be taken up again in the discussion of lacquer-type adhesives.)

Where these adhesives dry out to non-plastic films, it is necessary that the adhesive insure a penetra-tion bond. This means that failure will occur when the adhesive dries out if one of the faces being bonded does not permit of a penetration bond.

B. Cement Types: This discussion will be restricted to thermoplastics since they represent the large part of the commercial cements available for packaging. In addition to their suitability for use on non-porous and vapor-proof surfaces, these adhesives show the following characteristics:

Their body and flow are affected by temperature. This means that for satisfactory performance the temperature for application or activation of the adhesive should be thermostatically regulated within fairly narrow limits. It also implies limits

in temperature to the efficacy of the final bond, usually brittleness at very low temperature and flow at high temperature.

They are of a plastic nature and so usually exhibit slow (cold) flow. Thus if the final bond is under a continuous tension, failure may occur through this tendency to flow. This effect is more pronounced in warm weather when the ease of flow

is greater.

3) They usually undergo a marked decrease in temperature at the moment of application, when the applicator of the hot glue meets the cold (room temperature) stock. This drop in temperature brings about an increase in body consistency. While this means the rapid development of tack, it also involves a tendency to web between the hot and cold sections; thereby making the use of hot glues and melts impracticable on ordinary printpress type of transfer equipment.

This rapid bodying-up of the adhesive on reaching the stock effectively controls excessive penetration of the adhesive into open-porous surfaces; it also prevents any movement or migration of ingredients from the adhesive and the paper stock

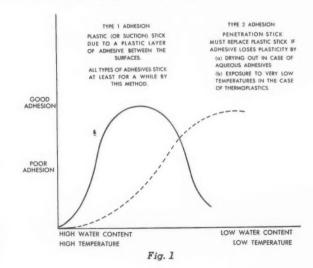
or vice versa.

Types of adhesives and types of adhesion

The types of adhesion developed between two surfaces fall into two classes:

- 1) Where adhesive film sets in a plastic mass, usually pliable; this is called a Plastic Bond.
- Where adhesive film is a hard, glossy material which may break when the bond is bent, but which continues to supply an anchorage or continuous film across the surfaces; this is called a Penetration Bond.

There is an interrelation between these two types of adhesion, because all adhesives at some time in their life give a plastic bond. Thus, most cold vegetable adhesives, after setting sufficiently to hold the surfaces together, make a plastic bond, which, in those cases where the adhesives finally dry out to a hard, brittle condition, becomes a penetration bond. This is exemplified qualitatively by the graph shown in Fig. 1.



440 PACKAGING CATALOG



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No. 53 WHITE LIQUID ODORLESS GLUE for carton sealing, tight wrapping or labeling with plain paper



No. 70 LIQUID CARTON SEALING GLUE for the manufacture of cartons or sealing the flaps of the filled





No. 91 MOISTURE-PROOF CELLULOSE ADHESIVE for labeling or sealing Moisture-proof Transparent Sheets



No. 69 WATERPROOF LIQUID GLUE for spot labeling tin or other metal



No. 793 PLAIN CELLULOSE ADHE-SIVE—Time tested by years of successful

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Carefully selected materials from all parts of the world are used . . . including the all-important ingredient of experience. Every pound of glue is pumped through a mechanical filter and tested for viscosity, then stored and aged in specially lined containers. The resultant product is a smooth, uniform quality adhesive . . . worthy of fulfilling its purpose as the modern seal of famous packages.

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There is no basic correlation between types of adhesives and types of adhesion. These facts are brought out in Table 2. Note that the penetration bond is linked with brittle films of glue which demand penetration into both (usually porous) surfaces in order to effect continuity of the film across the bond in spite of its brittleness.

Always of interest is the matter of a universal adhesive. Obviously, such a product would have to give a plastic bond in order to be suitable to both porous and non-porous surfaces. In line with this is the common experience with adhesive or sticking plaster and its counterpart in scotch or masking tape, which are applicable to a wide variety of surfaces.

Types of adhesives vs. functions

The choice of an adhesive is often restricted by the functions it must perform. These limitations may be inherent in the nature of the materials being bonded (primary); or in the nature of the material being packaged (secondary).

Thus, the trend of modern packaging not only to beautify but also to preserve the contents of a package has imposed many severe limitations on the various types of adhesives. Age-proofing is achieved mainly by preventing the diffusion of light, air (oxygen), moisture, and grease, into or out of the package. Any material that effectively prevents the diffusion of gases or moisture through its own substance, automatically prohibits the direct use of solvent adhesives because these must get rid of their solvents in setting. (It must be noted, however, that if one of the two surfaces being bonded permits the necessary loss of vapors then a solvent type is permissible.) These facts are summarized in Table 3.

A secondary limitation which restricts the choice of adhesive is the matter of odor in the solvents. Thus in packaging many food materials, the use of certain adhesives with (organic) solvents would give a satisfactory bond, but they are objectionable because they would contaminate the flavor of the food.

Further problems brought up by function, which influence the final selection of the adhesive within a given type, are the rapidity with which the product should set to permit full rate of production of the unit, the tensile strength of the final bond, etc. However, these are matters to which the supplier of adhesives normally directs his attention.

Factory considerations

After some reputable manufacturer of adhesives has specified the proper product to use in terms of its functions, there still remains the problem of proper manipulation of the adhesive to assure a good final bond under plant conditions of production.

It must be emphasized that the supplier has to accept the restrictions as to choice of adhesive that are imposed by the nature of the materials. He has further to recognize the field requirements of the package; e.g., how it would stand up under varying climatic conditions, under physical abuse, etc. Only after these conditions are fulfilled can he concern himself with the factory considerations discussed at this point. Fortunately the progressive consumer recognizes the need for compromise, cooperation, and teamwork among machine designer, fabricator of packaging material, and the supplier of adhesives, to get production going on the more difficult type of packaging projects.

TABLE 1.—CHARACTERISTICS OF ADHESIVES

AQ	UEOUS PHASE CONTINUOU	NON-AQUEOUS PHASE CONTINUOUS		
Aqueous Adhesives that are true (or nearly true) solu- tions	Of materials that dissolve and usually have an af- finity for water. Usually viscous	Dispersions or Emulsions	Lacquer-Type Adhesives that are true (or nearly true) solutions in or- ganic solvents	Colloidal Solution
Slow drying Vegetable Ad- hesives :	Most Aqueous Vegetable Glues Silicates Many Cold Protein Glues Gum Arabic	nercial types are: Latex Adhesives Specialties with Milky Appearance	"Cellu-Gums" Clear lacquer adhesives for transparent sheet- ings	Wax Gums
В.	CEMENTS: (Both faces r	nay be impervious to all v	apors from solvents)	
Aqueous	THERMOPLASTIC CEMENT Types	TS Ion-Aqueous Types	CHEMICAL Synthetic Resins tion or Thermo	(Polymeriza-
	Con	nmercial types are:		
Some Flexible Animal	Glues (where loss of to the final bond)	Hot Melts	Synthetic Resins	



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The manipulative factors are divided into three categories, related to:

1) The adhesive itself;

2) The mechanism for the application; and

3) The surfaces to be bonded.

This approach will assist the operator in making a point-by-point check of his equipment, although it is recommended that the instructions for using the machine be closely followed.

Factors concerned with the adhesive are:

r) Temperature of Glue: Cold glues should be at room temperature before dilution, as products chilled by exposure to low temperatures would be unduly heavy and so induce the user to add more water.

Heat will thin out most glues, so that the proper working consistency can be attained with reduced dilution in summer, or even with no dilution where the glue pot is heated. In fact, heating the glue pot often provides a simple method of speeding up the setting of the adhesive. This is sometimes desirable where extremely short compression is provided or where it is necessary to limit penetration into very absorbent surfaces. For adhesives with non-aqueous solvents, the volatility of the solvents generally makes heat undesirable, as it will lead to rapid thickening.

2) Dilution: If adhesives are thinned beyond the limitations outlined by the supplier, the solids in the glue will be carried too deeply into the stock, leaving an inadequate coating on the surface to provide a proper bond. In other words, excessive dilution will destroy the continuity of the film which is essential for adhesion. On the other hand, insufficient dilution may lessen the degree of penetration which is necessary for secure anchorage. Therefore, dilutions must be accurate for satisfactory results.

It is in general desirable to agitate the adhesive prior to adding the diluent so as to get a true picture of its consistency under operation. Only then should the diluent be added with continued agitation.

3) Care and Storage: It is advisable to keep the container covered to avoid any thickening by evaporation or contamination by dirt. It is always advisable to store the containers at operating-room temperature. In winter, apparent heaviness of the adhesive is due to cold, so before dilution, products should be brought to room temperature. It is also undesirable to store products near radiators as this will cause thinning out and promote evaporation of volatile solvents.

Mechanism of application: This should permit effective transfer of the adhesive in an adjustable thin film from the glue pot to the surface (or surfaces) being bonded. This involves one or more of the following:

I) Maintenance of consistency: To insure proper mechanical operation and ready transfer of the adhesive, the body of consistency of the adhesive in the glue pot must be kept within a given range. As the glue thickens in the pot through evaporation, it should be thinned, preferably with a special dilute glue mixture. This can be prepared by thoroughly mixing I part of glue with 2 parts of solvent (usually water).

For any glue that contains volatile solvents, a cover is desirable to retard thickening through loss of solvent.

When the body of the adhesive is regulated by temperature, e.g., where glues are applied at temperatures above that of the room, overheating will cause excessive thinning, which results in splashing; other harmful effects being burning and decomposition. Again undue cooling will usually cause a rapid increase in body with consequent soiling of the machine. To hold the temperature of the glue substantially constant, and thereby obviate localized overheating, the glue pot should be jacketed with water or with some other liquid which is kept at constant temperature by a thermostatically controlled heater.

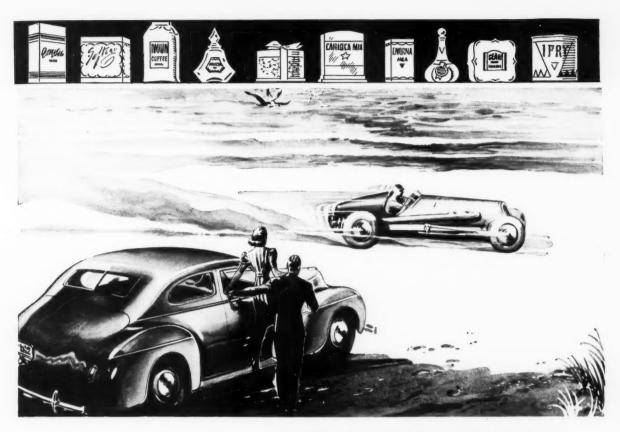
2) The applicator should have true surfaces to assure uniform transfer to the desired area. This may mean periodic cleaning or smoothing of the surfaces.

3) The applicator should provide means both for

TABLE 2.—TYPES OF ADHESION AND SUITABLE ADHESIVES

Type of Adhesion Surface Requirements		Type of Adhesive	Used on		
Penetration Bond	Both surfaces must be absorb- ent, wettable by adhesive, and permit the diffusion of the solvents	Usually cold aqueous adhesives of solvent type that dry out to brittle films. (Any type that dries to a brittle film would utilize this type of bond)	Materials Open Paper Stocks		
Plastic Bond	At least one surface must permit diffusion of Solvents	Solvent Adhesives that dry out to Plastic Films	Smooth, usually less porous surfaces For Aqueous Adhesives—Glassines, Bond Papers e.g., For Lacquer Type Adhesives —Transparent Tissues		
	Neither surface will permit the diffusion of solvents, i.e., impervious surfaces	Cements, e.g., Thermoplastic Adhesives	Smooth, non- porous surfaces Foil to Itself Certain Plastics		

A special case for ''solvent adhesives'' occurs where two surfaces of the same material are soluble in some solvent which can be used to partly dissolve the surfaces and form a solute bond or weld after the solvent has evaporated. This case merely falls in the class of solvent-activation or re-moistening as the solvent is not the adhesive. An analogous case for ''cements'' is where two surfaces of the same material are thermoplastic and so can be heat-activated and welded together.



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Specialization is of the utmost importance in adhesives, too. On the principle that each job is best performed by an adhesive designed specifically for that job-Arabol has in its files 8,500 adhesives formulae. Every day sees 900 of these adhesives in active use.

The multiplicity of adhesives operations in the packaging industry has led to the creation of many specific Arabol formulae. Some of the products designed for these operations are listed below.

COLD PICKUP ADHESIVES: Arabol manufactures varieties specifically for Burt, Standard-Knapp, New Way, Kyler and similar machines. These adhesives do not adhere to tin—eliminating any tendency toward rust spots.

FULL AUTOMATIC LABELERS: HPE #2 is designed especially for glass container labeling with Ermold (6, 8 or 10), O & J, World and Oslund Rotary and New World Automatic Bee Line Straightaway machines. A concentrate, it can be used without dilution for heavy label papers. Non-crystallizing and moisture-resistant, it assures you secure, permanent adhesion.

CASE SEALING: NLC #15, a dilutable, concentrated adhesive is used on automatic machines, and for hand application. It assures positive adhesion on all types of shipping cases.

WRAPPING MACHINE ADHESIVES: AAA #1, a light-colored, WRAPPING MACHINE ADHESIVES: AAA #1, a light-colored, heavy, tacky paste for vertical roller application without dripping of adhesive, is designed specifically for Package Machinery Company Wrapping unit and similar machines. Our fluid NLC #137 is prepared for machines which transfer the adhesive from a wheel. NLC #137 is light-colored, fast-setting, non-foaming, non-crystallizing. NLC #20 possesses the essential quick-setting non-clipping qualities for high speed candy rolls. quick-setting, non-slipping qualities for high speed candy rolls.

CARTON FORMING MACHINE: Our light-colored NLC #26, which has no objectionable odor, is particularly adapted to the Pneumatic Scale Corp. carton liner and carton forming machine. NLC #26 is dilutable for efficient pumping . . . does not foam or web out on offset application . . . operates smoothly for maximum economy.

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regulating the thickness of the film and for insuring uniform thickness throughout the film.

Increasing the speed of the machine will impose more work and more strain on the regulator of the film, thus tending to open it up. For this reason it is desirable to adjust thickness of film for the regular production rate of the machine rather than for slow production.

The surfaces to be glued should:

- 1) Come into uniform contact with the applicator to effect proper transfer of adhesive. This means that surfaces must be true.
- 2) Receive a thin, uniform film of adhesive from the applicator. This necessitates that they be wettable by the adhesive.
- 3) Come into uniform contact with the surfaces to which they are to be applied in order to provide a thin, uniform film of adhesive between the two faces.
- 4) Be held in a strain-free condition after contact is established (as in 3) by some device (e.g., a compression belt) until the adhesive has set sufficiently to effect a bond across the surfaces and so permit the handling of the packages. When this bond has fully dried or adjusted itself to room conditions, it should be slightly stronger than the materials bonded to make it fabric-tearing.
- 5) Be at room temperature and adjusted to room conditions. To avoid trouble with cold stock, it is advisable to store it under operating-room conditions.
- 6) Be of seasoned stock. Damp or green stock (or unduly damp weather) tends to slow up operations, so stock should be supplied from storage in proper rotation.

Field considerations

The finished package must fulfill under field conditions the objectives for which it was designed. Thus, in addition to withstanding shelf life satisfactorily under varying climatic conditions, the adhesive bond may have to exhibit resistance to moisture, water, solvent, or other factors, such as refrigeration or sweating. As responsible suppliers usually give full consideration to these factors, the producer of packages is sometimes inclined to overlook them.

Main types of failure and remedies

Examining once more the qualitative picture of the various types of adhesion (see Fig. 1), it is readily seen that in the initial stages, i.e., on the freshly sealed package leaving the production unit, the bond is almost always plastic. If the bond does not hold, this may be due to Rate Failure, or Final Failure. A clear differentiation in the trade between these two types of failure would be helpful

Rate failure: If there is any tension exerted on a fresh bond—possibly because of resilience or springiness in the flaps—the time interval allowed by the compression (or tension-release) belt may not be sufficient to permit setting of a plastic bond strong enough to overcome the tension. This is called Rate Failure because it is concerned only with the degree of setting of the adhesive within a given time. The same sudstance would

undoubtedly have given a good final bond if the surfaces had been allowed a longer time of contact.

Rate Failure usually indicates that the basic character or chemistry of the adhesive is essentially correct but that the problem in hand calls for a faster-setting grade of a similar product.

Final failure: This means the failure of an adhesive bond even after prolonged contact of the surfaces. It may occur even after satisfactory performance tests in the machine (where, for example, the adhesive finally dried out to a brittle film and a penetration bond could not be established on both faces).

Final Failure generally means that the wrong adhesive was being used, and this may necessitate the devising of an entirely different formula.

To overcome rate failure: As rate failure involves both tension and setting-rate factors, it may often be remedied by reducing the tension (scoring, etc.), increasing the time of tension release, changing the type of stock or a combination of those factors. In terms of the manipulation of a given adhesive, the procedures to speed up the rate of setting are:

- A) For solvent adhesives it may be necessary to:
- 1. Regulate the thickness of the film to the minimum for the type of stock, as a thin film sets more rapidly than a thick one. Irregularities affect the thickness of the film. A rough surface will demand a thicker film in order to establish a smooth continuous adhesive face against the surface to which it is to be bonded.
- 2. Use the adhesive in a heavier body. This is necessarily limited as a heavy consistency may prevent application in thin film. Hence it is often preferable to:
 - 3. Heat the adhesive, which:
 - a) Increases the spreadability of the glue, thereby permitting the application of thin films;
 - Applies the adhesive at a higher solids content, thereby securing additional tack from the cooling and thickening of the glue film on the stock;
 - c) Causes greater loss of solvent (water) from the gummed surface during the tempering period, thereby increasing tack.
 - (For non-aqueous solvent adhesives, the use of heat is undesirable because of volatility of the organic solvents.)
- 4. Allow a greater amount of time for the tempering of the adhesive.
- Be sure that the paper stock is absolutely dry and at room temperature.

Since green stock is damp it will retard the setting of aqueous adhesives. The two faces of the stock may cause the adhesive to set at different rates; thus, if the paper stock is uniform, the calendered side will usually exhibit the higher rate.

- B) For the thermoplastic type of adhesives, it may be necessary to:
- 1. Regulate the thickness of the film at the minimum, to cause a rapid drop in temperature with the accompanying thickening of the glue.



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to solve new or difficult problems. These men, who have developed adhesives to solve insuperable problems such as the cellulosic sheet difficulty, the transparent lacquer difficulty and the many new demands of modern, high-speed packaging machinery, are ready to undertake filling your particular requirements. If we have no formula suitable—out of the more than 700 developed by our researchers—they'll create one for you.



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- 2. Use the adhesive at a heavier body (i.e., at a slightly lower temperature) provided that the thickness of the film is not increased. In applications that depend on the fluidity of the glue to regulate thickness of the film, this is not feasible; in fact, it is preferable to use the glue on the hot side and in this way assure the advantages of a thin film.
- 3. Be sure that the stock is at room temperature in order to assure rapid cooling.

Thermoplastic adhesives bond surfaces in a cold plastic film. Though the rate of cooling is normally rapid, it can be increased by all conditions that favor a rapid drop in temperature from the glue pot to the surface of the package. This fact can be helpful in analyzing the effect of various changes in rate.

To overcome final failure: When the bond fails in spite of prolonged tension-free contact of the freshly glued surfaces, tests should be made to study adjustment of the adhesive to its surroundings. These types of tests are generally well established by the supplier of adhesives before the product is recommended. Even then, a series of very slow secondary adjustments between the adhesive and its surroundings may occur over a period of several months, resulting in another type of final failure called Aging, on which the adhesive supplier can usually give competent advice.

Subsidiary types of failure

The common subsidiary types of failure can best be understood by studying the following typical plant problem in the bonding of a transparent tissue.

The use of the lacquer type adhesive needed for the job involves a series of special problems due mainly to:

1) Transparency of the tissue, which makes it necessary that:

- a) the adhesive be colorless and transparent and that it retain these characteristics on aging;
- b) the glue film be free from bubbles or other flaws that would mar its appearance. Application requires great care.
- 2) Thinness of the sheeting, which means:
- a) more care in handling to maintain smoothness;
- b) risk of serious consequences (blocking, bleeding, etc.; see below) due to solvent effects on the sheeting, inks, etc. (These troubles are naturally minimized as the caliper of the sheet increases.)

3) Solvent action on the sheeting, inks, etc., by liquid ingredients in the adhesive. These liquid ingredients fall into two main classes:

- a) The solvent itself, which ideally should completely disappear from the adhesive for proper development of the final bond. While this liquid should diffuse through the sheeting without exercising any solvent action, in practice, the sheeting is frequently attached. This can serve as a ready commercial indicator that this liquid will diffuse through the sheeting in procedures.
- b) The plasticizer (usually a non-adhesive liquid ingredient) which ideally should remain in the ad-

hesive to assure plasticity in the final bond. (Ideally the plasticizer should have no action on the sheeting, but in practice it often has some solvent action.)

Effects caused by solvents which are of commercial importance are:

a) Blocking: Here the adhesive solvents partially dissolve and so soften the sheeting as they migrate through it. This partly dissolved sheeting by becoming soft and sticky tends to adhere to sheeting packed closely in contact therewith. This is aggravated when the solvents can rapidly dissolve the sheeting while also having low volatility.

In aqueous adhesives, e.g., envelope gums, moisture re-activation achieves the same result, i.e., the sticking together of the units called blocking.

- b) **Bleeding:** Here the solvent, which may go through the sheeting either by diffusion or by solution, attacks the inks or colors, causing them to fuzz, run, blot, stain, or show through. This is particularly likely to happen when the solvent is not very volatile and has a strong affinity for the sheeting (as this usually means a rapid rate of diffusion).
- Blisters: Too actives olvent action on the sheeting will cause it to bulge and form blisters.
- d) Migration of some of the (liquid) ingredients in either the adhesive or the sheeting into or from the adhesive film after an unusually protracted period of time. The resulting embrittlement of either the film of glue or the sheeting itself which is called Aging or Migration Failure, is usually a slow process requiring many months. To be quite safe commercially, the estimated life of the package in the field should be well within this period.

Two causes of trouble are:

- a) When the plasticizer migrates away from the adhesive into the sheeting. This results in embrittlement of the glue and so to failure of the plastic adhesive bond.
- b) When plasticizer migrates away from the sheeting and into the glue, resulting in a loss of pliability of the stock.

The compromise called commercial success

Consideration of all the factors discussed in the preceding sections should serve to give a perspective on the problem of adhesives. It now remains to establish a viewpoint on the final commercially satisfactory job.

While it is obviously absurd to expect the joint existence side by side of contradictory factors, such a situation is encountered in practically every problem that involves adhesives. For instance, it would be desirable to have a lacquer type adhesive exhibit a very slow (evaporation) change of consistency in the glue pot and also dry rapidly on the stock. Similarly, each final property of an acceptable product must compromise between positive and negative factors inherent in the situation.

CASE SEALING
CASE SEALING
CARTON SEALING
GLUE

COLD PICK-UP
GUM

BOTTLE
LABELING
GUM

TUBE GLUE

BRIGHTWOOD
GUM

TUBE GLUE

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GUM

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getting top quality. You have the assurance that your package will hold together under the most adverse conditions, that your label will adhere to your bottle or can under the most trying circumstances.

It's smart to specify your adhesive as well as your ink, paper, board, plastic or what have you. Remember, your adhesive is the substance that holds all the others together. If it fails, the expense of design, production, advertising and merchandising is wasted. Be sure—Specify Star Adhesives.





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Thus, for a lacquer-type adhesive, the following balance of factors may be involved in any given job:

Dries slowly			1	Dries fast
Develops slow tack				Develops high tack
Easy to operate in the machine				Difficult to operate in the machine
Tends to give poor bond(plasticizer us- ually nonadhesive)	Slow	W.C	lue	Tends to give good bond due to solvent bite into surface
Is comparatively free from blocking and bleeding				Tends to block and also to bleed inks (solvent ac- tion on stock, ink, etc.)

The practical application of this from the standpoint of the customer is the realization that he should empha-

size the important factors of his problem and willingly put up with the negative features that necessarily accompany them.

Ample evidence of this is found in the large number of adhesives of each type made by responsible suppliers. Each of these products probably meets one or two major demands of the same individual situation and is a compromise on other details.

The appreciation by the producer of this concept of "balanced formula" will greatly assist the commercial solution of the many new packaging problems that are constantly arising. Future progress will emphasize what has been true in the past, i.e., that with better understanding of an entire problem there always comes not only that increased cooperation—but also the compromise—that spells success in modern packaging.

TABLE 3.—SUMMARY OF PROPERTIES AND USES OF ADHESIVES

Property of Surface				sive	Requirement of Final Bond	Nature of Adhesive
(Age-proofing)		Solvent		Cements		
Neither Grease- proof nor mois- ture-proof	Most ordinary pa- pers, kraft pa- pers and paper- board for con- verting (permit ready diffusion of water and other vapors)	Aqueous Most gener- ally used	Non-aqueous OK for water- resistant bonds	Thermoplastics Non-aqueous types OK for water- resistant bonds	Frequently pene- tration bond of low tensile strength but stronger than the stock	Generally the several types aq. vegetable glues, silicate Hot aqueous protein glues where high tack necessary
	Wood	Generally used	Usually NG	Chemical cements for water resis- tance	As above but need higher tensile strength to be stronger than stock	Aq. vegetable glues (occasionally) Aq. Protein Glues (e.g., Fish, Animal, Casein) Types Chemical Cements (e.g., Plywood Resin)
Grease-proof	P. T. Cellophane, Acetate permits the diffusion of moisture - vapors of organic sol- vents	Frequently used	OK for water- resistant bonds	Thermoplastics also OK where water resistance and no solvent odor desirable	Generally Plastic Bond	Aqueous (Latex and Vegetable) Glues and Lacquer- types adhesives most often used
	Glassine, Grease- proof Paper, Parchment (per- mit the diffusion of moisture but not the vapors of organic solvents)	Frequently used	NG	Thermoplastics OK	Generally Plastic Bond	Usually slow drying, aqueous vegetable glues
Moisture-proof	M. P. Cellophane, M. P. Acetate lacquered glas- sine	NG	ОК	OK	Plastic Bonds	Usually slow-drying lacquer-type adhesives
	Pliofilm	NG	OK	Material itself is thermoplastic	Plastic Bond	Usually heat-sealed to itself
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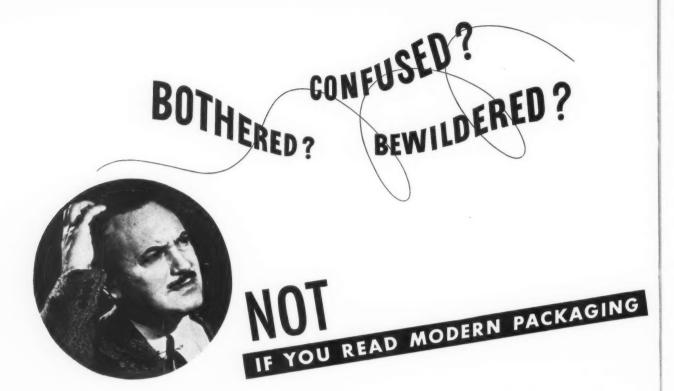
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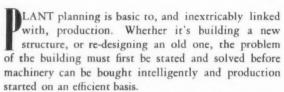
PACKAGING CATALOG

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Machinery and Supplies

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The discussion here is based on the "ideal" situation of starting completely fresh—from site selection to actual building construction. Not all packagers have this full freedom of choice, being hampered by monetary and other considerations, but the ideas discussed below can easily be translated into other situations.

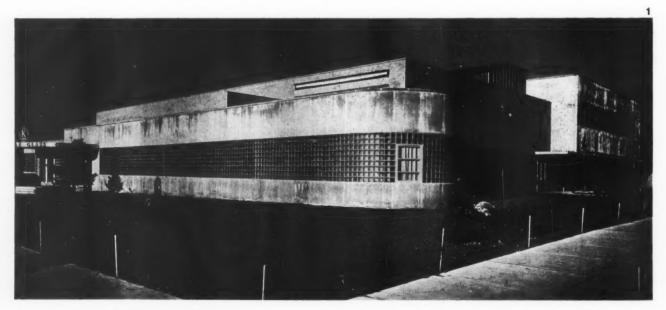
The intent of this article is to give packagers a complete and well-rounded view of the basic problems involved in plant-planning, seen through the eyes of one of the country's leading architects.

- Q. Mr. Lescaze, what questions do you ask a client when you are retained to create the design of a packaging plant?
- A. Well, I have to examine sites and then determine the location of the building. I consult with my client on many factors that lead to a final selection of the location. First, of course, his proximity to raw materials, his location in relation to suppliers of packages and packaging materials, his position in relation to centers of distribution—these are basic questions which determine site selection.

- Q. What are the other factors in selecting the location?
- A. I would ask still other questions—about the size of the labor supply needed, whether housing facilities were available for the employees and the amount of water available for manufacturing and for conditioning the air. Most modern plants are constructed with air conditioning in mind. I would also incorporate a cooling tower as an integral part of the plant design. This enables the manufacturer to reuse a certain percentage of the water consumed in conditioning the plant.
- Q. And now for the appearance of the site?
- A. Above all, I tell people to refrain whenever possible from doing harm to existing terrain. I have particularly in mind the \iddle West—rolling hills near highways, good industrial sites. Six months later you go by and find that a couple of steam shovels have leveled a site flat, with the result that after it has been shaved down, your plant will be at the bottom of a saucer, with a bank behind it and interest is destroyed.

I have often wondered why that was done. If you are on a slight elevation, you draw more interest. But it seems almost a general rule in starting to build a plant, to level everything before putting down the foundation. It is not cheaper. You spend a lot of money in grading. It

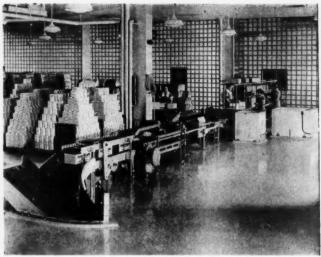
1. Gate keeper's lodge controls both the railroad spur and the employee's drive to the parking space. Tall part of building contains lecture and demonstration rooms.



PACKAGING CATALOG

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2. Clerical space. Glass bricks and artificial light evenly distributed afford good lighting. Center beam contains ducts for air conditioning. Entire ceiling is acoustically treated to reduce noise. 3. Note effective use of glass bricks and even spacing of overhead fixtures.

is very important to point out this—don't choose a site which is too difficult to handle from the point of view of traffic, but, if you choose a site which is not flat, whatever you do, don't make it look like a billiard table!

- Q. Would you tell us something about the building, itself—the external appearance, facilities, etc.?
- A. The plant must be near arteries of transportation, naturally. Perhaps a spur line of a railroad or just off the main line. Probably a highway for trucking. And very likely an adjacent airline will facilitate executive travel. I mention these rather obvious points to emphasize the not-so-obvious idea of taking full advantage of them. That is, making your plant—buildings and landscaping—as attractive as possible to passersby.

I would even take advantage of the roof, so that the air traveler may identify the plant while flying over it. After all, you spend a very small amount of money in taking full advantage of that man-given advertising space—the roof. Another question is the use of signs and trade names and so on. The manufacturer usually knows in advance what he wants to use in the way of worded messages. If he would just confide in his architect, the latter could work the sign functionally into the building design. And I wish I could dramatize this message so that it would penetrate the consciousness of the manufacturer who is planning a plant design. Don't start with the idea that oh, well, it's just a plant and it doesn't make any difference where the water tower comes out and how the thing looks! I think it all does matter. I think it matters very much because of the impression you make on the passerby and on employees. I have yet to see one mechanical, physical necessity in a plant which needed to be ugly. If it is ugly,

it's because it was an afterthought, not properly thought out beforehand. I don't say that a plant can be of the same kind of beauty as the Parthenon, but I do say that there's a kind of beauty to be found in a plant, very definitely, and the progressive manufacturer should take full advantage of it.

- Q. How about interior appearance?
- A. You mean for visitors or employees?
- O. Both.
- A. The interior should allow for light, be well designed for heat, etc. Color schemes are important to both visitors and employees. Fresh colors, neat machinery make a better appearing plant and one that is pleasanter to work in and thereby more efficient. I believe that many packaging plants have capitalized on visitor interest in their process and product to adopt a regular program of showing visitors around. This would presuppose an attractive interior or the whole idea would boomerang.
- Q. How about the interior designed through a production efficiency frame of reference?
- A. As I understand it, most packaging plants utilize the gravity-flow principle of production. Packaging operations are usually confined to one or two central floors.

Now, on the placing of equipment, I believe that no one knows more about that problem than the production superintendent of the company. He has a very definite knowledge of what happens on the production line, how it should flow. I claim that an architect, even if he has designed 25 plants of the same type, can never hope to acquire this specialized knowledge. Nor is it necessary that he should. The production man knows it better, but the architect is there to translate it into efficient form and efficient space arrangement.

PLANT LAYOUT CHECKING POINTS

Almost innumerable factors may affect the selection of machinery or the relationship between various machines and between machines and other elements in the plant. Since advance consideration of these factors can frequently avoid much difficulty, delay and expense, it is advisable to check every angle carefully before making any commitments as to machinery installation or plant layout.

The size of door or opening into building in which the machinery must be moved. 2 The size of the largest available elevator

and its maximum load.

The load capacity of floors and passage-

ways where equipment must be moved.

The load capacity at point of installation. Location of obstructions and utilities adjacent to point of installation, i.e., sketches to show trucking aisles, sewer and drain pipes, sprinkler pipes, conduits, air conditioning ducts, important fixtures and other immovable structures.

Type of floor and ceiling construction, i.e., data governing method of mounting and fastening machine into position.

7 Nature of provision made for vibration

caused by machine.

8 Nature of provision to be made to permit machine to withstand other vibration present at point of installation.

Under what conditions will the machine be operated: warm, hot, cold, wet, moist, dry, dusty, clean, quiet, noisy, sticky, etc.? Electrical current available.

11 Local safety law requirements and factory's own safety requirements.

Local building and factory laws insofar as they relate to movement of machinery into plant, installation and mounting.

13 Local trade union restrictions, where these exist, regarding trucking machinery, rigging, installing machine and installing accessory plumbing, heating, wiring and similar utilities.

14 Union restrictions relating to work of machinery maker's service men during installation, during training period, during

test period or at later dates.

15 Number and size of accessory changeover parts and provision for handling. 16 Requirements for special guards or

covers to conform with plant appearance. 17 Limitations on hours of work of in-stallation men, i.e., can they work while plant is operating, can they work at night, will they retard other production, etc.?

18 Space for uncrating machinery 19 Availability of additional laborers as required by service men and categories or trades of same. Labor helps available, i.e.,

lifting machines, jacks, etc. 20 Air pressure requirements.

21 Ceiling heights, hopper heights, etc.

Relations to Adjacent Machines

22 What other machinery will connect up with the installation in question?

23 What method will be used to convey materials to and from this installation? 24 Will such conveying devices be a part of

other machines?

25 Are these machines now installed—to be installed at the same time-to be installed later?

26 What method will be used for supplying materials or conveying supplies to the machine, i.e., particular note should be made of means of conveying and storing an adequate quantity of accessory supplies such as labels, cartons, wraps, etc., adjacent to points of use.

27 Remote controls affecting particular installation or entire line of which machine

is a part.

Product Limitations

28 Peculiarities of the product, i.e., variations in size, shape, density, viscosity, etc.
29 Peculiarities of the package, i.e., variations in package size that may be anticipated. Both outer size and inside volume should be considered.

Seasonal peculiarities.

Varieties of ingredients to be handled. Special requirements as to metals or other materials coming in contact with the materials which are being packaged.

33 Static or similar material handling

difficulties anticipated.

34 Provision for test run in machinery manufacturer's plant using actual samples of package materials and supplies which will be later utilized in conjunction with the installation.

Operating Conditions

35 Make and type of motor, starter and switch required or preferred (if furnished with machine).

36 Location of all machine controls when-

ever position is optional.

37 Lubricating requirements and systems. 38 Nature of each changeover contemplated from product to product or package size to package size.

39 Frequency of changeover from one product or package to another.
40 Number of operators required—under various operating conditions. 41 Training of operators required. What

degree of training is necessary? How long will training take and who will train?

42 Location, provision for seating operators.43 Color and kind of paint necessary to match general paint schemes and to withstand spilling and cleaning operations.

44 Requirements for special plating or

special treatment of metal parts

45 Provision for cleaning machines, i.e., supply machinery manufacturer with data as to special requirements for cleaning involved in reaction to a product and machine parts, hardening or gumming of products. 46 Climatic conditions.

Time Factors

Desired installation date.

Time required to complete installation. Time required to complete accessory installations and utility work necessary prior to placing machine on floor.

50 Time allowed for tune-up.

Time allowed for training of operators and maintenance workers.

52 Date on which production must start.

- Q. In that case the architect is merely the interpreter. . .
- A. Don't say merely, although that brings up an interesting point. The architect is not *merely* a translator—he is also a coordinator. The successful building is the result of the successful coordination of three factors: the working of the interior, the spending of money in a balanced and judicious way and the outside appearance of the building.

Let me illustrate what I mean by judicious spending. In building a small house, say, I might recommend wooden shingles to protect the client's investment in the house. But I would be wrong in recommending stainless steel doors or electric-eye control. The architect must have harmonious proportion in his spending of the client's money as well as in his finished structure. Good balance is essential to good architecture.

- Q. This brings up some interesting points. What would you say is the relationship of the architect and the builder?
- A. You will find that the most harmonious relationship—and the one most productive of satisfactory results, from the point of view of the finished product and of cost—is complete separation but full cooperation between architect and builder. I think you will find that the builder prefers it so and the architect, certainly can function more efficiently.
- Q. Why do you prefer the separate services?
 A. It is not a matter of personal preference but of efficiency. I believe that the builder is at his best when performing his specialized functions—the wise buying and the getting of materials at proper costs and on time. This is his job and he is happier doing it and letting the architect be responsible for design, thoughts, opinions, arrangements. This is the architect.

tect's particular sphere.

If there is a change in plans or a reason to make one, the client looks to the architect as the judge, adviser and arbiter. If he is a worthy architect, he works in the client's interest as any reputable professional man does. He is in a position to know—and should know—proper prices and reputable sources of supply. In his client's interest, he can act as a check on an inefficient or wasteful builder.

- Q. What of the relationship of architect to client?
- A. In addition to his services, the architect should be taken completely into the client's confidence, just as if he were the vice-president in charge of plants or something similar. I have seen it happen so often that the architect was hampered and the client did not receive the best possible structure, simply because the architect couldn't get to the facts for which he was supposed to plan.
- Q. In other words, you would say, "Take the architect into your organization while he is working for you. Let him look at anything he wants, tell him what he needs to know."
- A. Exactly. He is a member of a profession with a code of ethics, just as any other professional person. Treat him as you would your lawyer or doctor.
- Q. To get back to the specific design of a plant-how







- would you allow for expansion and obsolescence of machinery?
- A. That is a little abstract. I understand the average obsolescence of packaging machinery is 5 to 10 years. I think that even though the ideal in the abstract may be said to be an unencumbered space 200 ft. wide by 800 ft. long, it has not been proved to me that a space which is designed around equipment needs today and in use today might not be infinitely better and more useful space than that which in the abstract is thought to be the ideal space.
- Q. You mean you would design for present equipment, present methods?
- A. No, I feel that you should design a structure based on the most knowledge you can obtain at present—mechanical operation plus whatever provisions you may be able to make for likely future mechanical devices. But I think that going to the extreme and saying to yourself, "It is perfectly hopeless; I can't design my building around a known process today because that process may change two months from now." I think that is a negative attitude which will lead you to building a structure which will be no better for you or for your yet unborn new processes.
- Q. How would you allow for possible growth or expansion?

- A. Vertical plant expansion must be taken into consideration when the foundation is being built, of course. One must plan a foundation sturdy enough to support additional stories. This is certainly true in an area of high land values. On the other hand, where horizontal expansion is desirable, I would plan for this by allowing sufficient site space for growth and building the main plant with walls that could be broken through for adding wings. Or I would plan for additional, related buildings.
- Q. I believe we've covered a good many points. . . . A. Yes, we could talk for hours more about this subject. But the main points have been established and the basic thought I would like to underline is this-approach this question of plant design in full harmony with your architect. First of all, select an able and creative architect. Discuss your problem from every angle with him. The more he knows about your needs, the better job he can do for you. His job is to integrate the many functions of your business in the tangible form of a plant. If his knowledge is fragmentary, the result will be hodgepodge. Only complete confidence in him can result in complete knowledge and a fully integrated and functional structure, a plant that will be efficient, a fine advertisement for the product and that is within the budget for construction.

Factors of mechanization

by C. H. Lambelet

RRESPECTIVE of the product, practically every manufacturer at some time or other is confronted with the question, "Does my operation warrant mechanization?"

This question is an important one as it involves a major investment in equipment which, if not operated sufficiently and efficiently, might become so much "dead wood." If the proper type of equipment is not installed, its productivity might be too large or too small, not elastic enough in range, not applicable to proper operation on various types and sizes of present or future contemplated packages and possibly requiring too much mechanical attention for the size and personnel of plant in which it is installed. At just what point in growth one should resort to machines is difficult to answer.

If one takes into consideration the various types of equipment which are used in packaging today, whether it be wrapping, cartoning, casing and sealing, liquid or dry filling, tube filling, capping, labeling, etc.—the possible combinations of these various types and the varying conditions obtaining in different plants makes the question even more complex. The factors and conditions and problems which should be taken into ac-

count when one is considering switching from a hand operation to a mechanical one follow.

How about the package?

First, forget production. Strange as it might appear, the first factor to determine is the question: Does the package lend itself to mechanical handling? Because irrespective of what levels production might reach, if that package which at the present time, is being fabricated by hand methods, does not lend itself to machine handling, the installation of equipment might become more of a headache than a help.

As an example here are two cases wherein a machinery company was asked to supply equipment for two different packages which were handled manually. In both of these cases, production warranted equipment but the type of work which the machine would be called upon to do was of such a nature that in one case there was (and is) no machine which could handle the job and in the other there were but two types of machines which could do the work. In either case, as the packages came off the machine they would have to be rehandled manually in order to correct the defects which, due to the design of the package, would necessarily occur.

In designing a package, even though one may contemplate handling it manually it should be kept in mind that at some future time it might become so successful as to warrant handling it mechanically. If for instance, it is a glass container, the glass supplier should be told that possibly at a later date this package is to be handled mechanically and asked to determine whether its design will lend itself to such handling. As an example, the throat or neck of a bottle might be such that, while no difficulty would be encountered in filling it by hand, when handled on an automatic filler, the size of the opening, the length of the neck, in fact, its very shape, might prevent the user from getting the full productivity of the automatic machine. It might be too top-heavy to convey readily; its contour might cause it to "climb" or "lock" on the conveyor chains, or its shape might not lend itself to accurate registration in labeling.

Machinery is still machinery and while its functioning is almost human at times, still there are certain human attributes which cannot be built into it, of which, possibly, a most important one would be the faculty or ability to compensate for continually varying conditions.

The bottles might vary $^{1}/_{8}$ in. in width. This does not mean anything to the hand operator, but can cause troubles in equipment. Labels might vary $^{1}/_{8}$ in. in dimensions and still the hand operator will center them on the bottle and make a perfectly acceptable package, whereas in a machine operation the location of the labels will vary or even "skew" with resultant unsatisfactory appearance.

When changing from manual to mechanical operation, in order to give the user full benefit in productivity with consequent savings, equipment has to be catered to and given accurate material to handle. While the machinery manufacturer realizes that he cannot count on receiving perfect packages and package parts and while he can compensate for a certain amount of inequalities in materials and still have his machine produce acceptable packages, yet the limitation of his equipment is much greater than that of human hands.

Hands or machines?

Every packaging machinery manufacturer has been up against this problem and it is not always easy to convince the prospective user of equipment that greater care must be taken in the materials when handled mechanically instead of manually. However, it is all a question of educating the package suppliers and the packager's own employees. When once this fact has been drilled into them there is no great difficulty in supplying acceptable material to the machine.

When contemplating the mechanization of an operation which previously has been done manually and when contacting the machinery builder, it is best to allow him to criticize frankly the materials that are being used. While the first reaction might be that any changes suggested are for his own benefit, one should consider that he is trying to eliminate headaches which he can foresee in a package. The machinery builder eliminates them for the user and makes his equipment a profitable invest-

ment for his customer. He is far-seeing enough to realize that the first sale of equipment might possibly be the beginning of a further friendly, and, for both sides, advantageous business relationship.

Even if suggestions which are made might cause additional expenditures for material, in the vast majority of cases the benefit which will derive from mechanization will more than offset this and still give an added profit.

Semi-automatic or automatic?

Another difficult question to decide is whether semiautomatic or fully automatic equipment should be installed. To answer this question is practically impossible as the conditions in each plant vary. This should be determined by a study of the individual case rather than by some hard and fast rule.

While many manufacturers at times or during certain portions of the year, could use fully automatic equipment, they have found it more economical and wiser to have semi-automatic equipment in conjunction with an efficient conveying system. At such times they so set up their semi-automatics in conjunction with the conveyors to form what might be called a "semi-automaticautomatic" line. Such an arrangement has many possibilities, is elastic and can be changed to serve varying conditions as they arise. In these cases, skids can profitably be installed in the form of channels or "I-beams" under the machines so that they can be readily moved by means of lift trucks and placed where desired.

Management plays a very important part in the efficient operation of equipment. Methods that are being efficiently used, with reference to routing or handling the product for manual packaging, might be the most uneconomical as far as machine operation is concerned.

Equipment not only lives with the purchaser, but he must learn to live with it. The installation of a conveyor belt will very often repay many times the discarding of trays or racks formerly used. In catering (and the word is used advisedly) to machines, one should not be afraid to spend money wisely.

More people or more machines?

Another factor enters into the purchase of equipment. For example, a product is successful, and in order to have enough production, more hands must be hired. Floor space does not allow this. However, by proper choice of mechanization, even if only operating part time, the question of seeking new quarters, increasing fixed charges, costs of moving with its inherent effect on production, possible loss of old and trained employees, can be eliminated. There need not necessarily be an increase in the number of employees. This should all offset the possible necessity of employing a mechanic to take care of the equipment.

On the question of mechanical supervision, it should not be forgotten that the machine which is working in the plant requires a certain amount of attention, of oil and grease, of cleaning and in general care the same as one would give an automobile.

Weighing and filling dry products

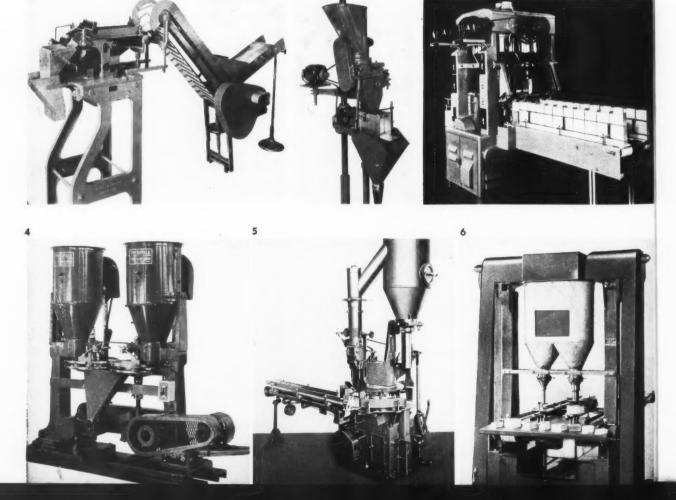
HE accurate weighing and filling of dry-product containers is of increasing importance to packagers in view of the more rigid standards of weight and fill being promulgated by the Food and Drug Administration. The difficulties of achieving such accurate weighing and filling are further increased by the tendency—as indicated by recent administrative actions—to restrict package sizes to dimensions far closer to the volume occupied by the contents than was formerly demanded. Such restrictions reduce the orifice through which the package may be filled, make settling of material more difficult and in other ways complicate the physical problem of handling materials. Automatic machinery, however, seems fully capable of taking care of these difficulties, provided they are adequately appreciated and anticipated.

Systems of filling

There are four basic methods of weighing and filling dry materials—accurate filling, gross weight weighing, net weight weighing and a combination of accurate filling and gross weight weighing.

Accurate filling is perhaps the simplest method. The correct quantities of the product are measured mechanically without the use of a weighing device. One way of accomplishing this is to measure by volume. Another is to use a definitely timed or regulated feeding of the material. As long as the bulk of the material remains uniform, good commercial accuracies can be guaranteed on correctly built machines of this type. If, however, the nature of the product is such that it varies in weight per unit of volume, then measuring by this method may

1. Conveyor net weight scale for free-flowing products such as crackers, cookies, etc. Weighs up to ½ lb. 2. Semi-automatic net weigher for free-flowing dried vegetables; pulverized, ground and bean coffee, etc. Capacity 2 to 20 oz. 3. Multi-station high-speed powder filler. 4. Dual volumetric filler for insertion of two separate ingredients into a single container. 5. Two-station bag flour filler. Bulk of load is wormed into bag at first station; second station finishing stream fills to correct gross weight. 6. Semi-automatic filler for gross weighing, volume filling or auger packing.



not be sufficiently accurate for commercial requirements.

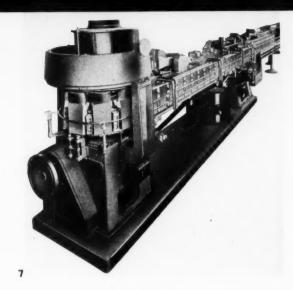
Accurate filling is successfully utilized for such products as scouring powder, jelly crystals, dessert powder, tooth powder, face powder, cut tea for tea balls and granular salts. Many machine units are available capable of handling various sizes of packages and with speeds ranging from 10 per minute to the neighborhood of 120 per minute.

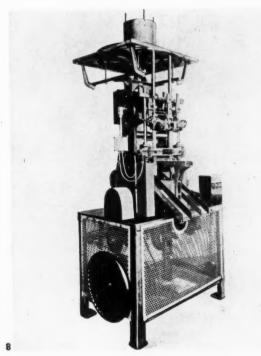
Gross weight weighing involves the use of scales which weigh not just the product alone, but, rather, the package and its contents. For accuracy by this method, therefore, there must be a relatively high degree of uniformity in the weight of packages. This may be achieved through the inherent nature of the package selected or through the use of a package-sorting scale (see article on Check-Weighing Scales and Devices).

The flow of material from the feed-hopper to the package is controlled by the scale beam on one end of which the package rests during filling. Thus, when the right amount of material is dropped into the package, the scale beam trips a shut-off which stops the flow of the material instantly and passes the package ahead to the next position. To speed up production, particularly on larger sizes of packages, two scale machines are frequently utilized. The first scale fills a bulk load of from $^2/_3$ to $^9/_{10}$ of the total quantity to be filled. The final load, weighed to extreme accuracy, is delivered by a fine stream to the second scale.

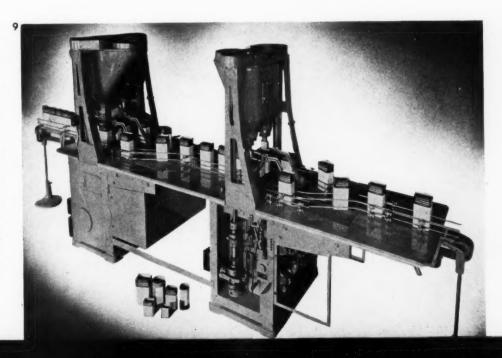
Gross weight weighing is particularly favored where accurate weighing of non-free-flowing commodities is necessary. Typical uses include powdered sugar, cocoa, malted milk, prepared flour, etc. Speeds range from 10 per minute to 70 per minute.

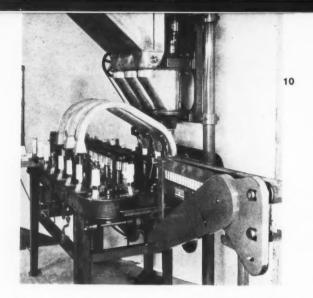
A combination of gross weighing and accurate filling (i.e., measuring) is sometimes used to achieve maximum speed and high accuracy. A typical instance is found in the bag-flour packer where it is further desired to achieve a tightly packed bag. The latter factor makes straight gross weighing impractical. By resorting to a worm packer for the machine's first station, the greater



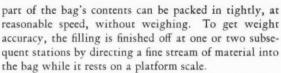


7. Automatic carton filling and sealing machine. It feeds cartons from a supply hopper, seals bottoms, fills through volumetric measuring pockets and then top seals. 8. Automatic machine which forms a continuous tube of transparent sheeting, bottom seals, fills, top seals and severs sealed packet. 9. Four-station filler; first two stations fill bulk load, later stations fill balance, checking by gross weight.









Net weight weighing is a system in which the package contents are weighed separately before being transferred to the package. A first essential for this type of weighing is that the product be free-flowing or at least semi-free-flowing. Obviously, this system cannot be utilized if the material is sticky and tends to build up and cling to the feed-hopper or funnel surfaces.

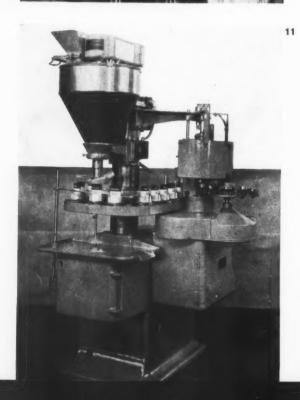
On net weight filling machines, the hopper feeds into a bin arranged on a scale platform. When the bin has received the predetermined weight, shut-off action occurs and the contents of the bin are dumped or otherwise transferred to the package.

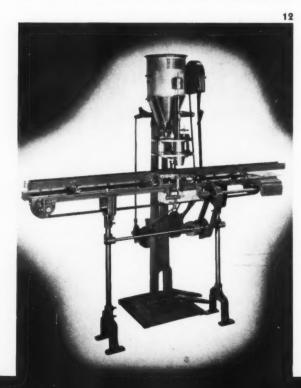
Net weight weighing is utilized for such products as coffee, salt, tea, rolled oats, etc. Speeds range from 10 per minute to 100 per minute.

A wide range of container types are utilized for dry products, including folding cartons, set-up boxes, fibre canisters, metal cans, glass bottles and jars, etc. Certain basic considerations, however, affect the design of all of these if they are to be successfully and economically filled on standard types of machinery. Thus, for instance, containers with narrow neck openings, which might be suitable for liquid filling, cannot be successfully utilized for packing powders.

A prime consideration in the selection of any container for powder filling involves the choice of a package with

10. Carton filler for dry materials with bottom and top folding and gluing mechanisms. 10A. Filler for "fluffy" macaroni which shakes material through a chute into packages. 11. Automatic combination filling and capping machine with lid transfer and feeding device. 12. Volumetric filler with automatic conveyor for high speed filling.





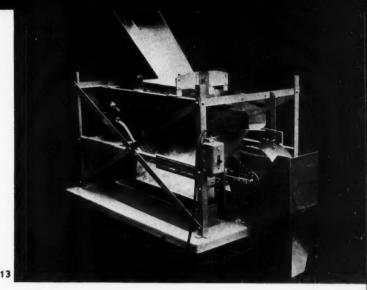
a suitably wide filling opening. Users of fibre-bodied canisters or metal cans sometimes solve this problem by filling through the open bottom end of the container and then seaming on the bottom. The limit of auger diameter is thus substantially increased and with it the potential rate of fill.

The folding carton and many types of paper bags now offered are well suited for packaging many of our widely used dry products. A number of entirely acceptable styles of each of these basic types of container are available. In either case, careful checking is suggested to determine accurately the adaptability of the product to the particular container selected. Such adaptability will concern the protection provided against leakage and contamination, the consumer's convenience and the merchandising appeal which the package provides.

Among the cartons, the sealed end type with extended flaps is extremely popular for products which are liable to sift. Bags also enjoy wide usage in this familiar field and improved standards in construction and design now definitely assure an increasing consideration of the advantages of this type of package.

The company whose requirements are not large can install an inexpensive hook-up which will help to lower packaging costs. As need demands more production, this first installation can be replaced piece-meal by more automatic and faster units. Thus an output as low as 5,000 per day will justify packaging equipment of some sort being installed.

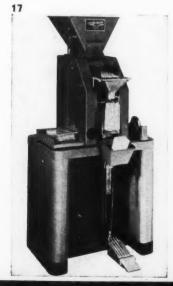
13. Net weigher using vibrating feed and tripping wheel balanced on a scale. 14. High-speed accurate-fill unit for non free-flowing materials. Lid pressing device appears in background. 15. Semi-automatic auger packer and filler. Fills to predetermined level in container. 16. Automatic bag filling scales, operating in tandem with bag closing and sealing mechanism. 17. Predetermined weight filler with electrically vibrated feed plates. Scale beam controls electric shut-off mechanism. 18. Two scale gross weighing filler for free-flowing and non free-flowing materials. Fully automatic. 19. Four-scale net weigher for macaroni, etc., with vibrator feeders.

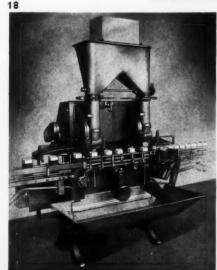


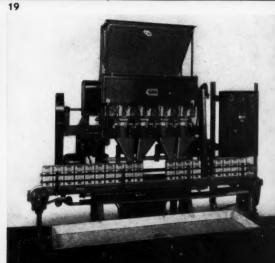




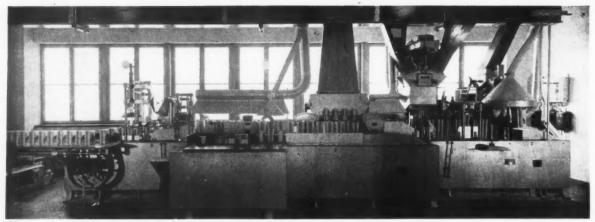












20



20. Gross weighing flour packer combining bulk feed and dribble feed. Machine also scores box, checkweighs, closes and seals. 21. Volume filler, handoperated, for filling dry products. 22. Automatic net weigher with power feed filling four packages at a time.

With folding cartons there are certain basic operations to consider. For some carton packages all will be needed, while for others only part are necessary:

- (1) Carton feeding and forming
- (2) Bottom sealing
- (3) Lining
- (4) Filling or weighing
- (5) Carton closing
- (6) Wrapping

The usual practice is to handle each of these tasks on an individual unit, but in some cases it is practical to take care of several on a combination machine.

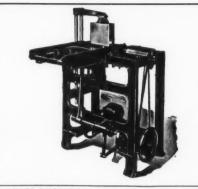
With paper bags current practice embraces automatic approaches comparable to those available for use with cartons. The extent to which these mechanical approaches are utilized is optional with the customer. A typical automatic paper bag line would provide standard types of equipment available for the following operations:

- (1) Feeding, opening and registering bags
- (2) Weighing contents and filling bags
- (3) Settling and sealing bags
- (4) Nesting and packing bags in shipping containers

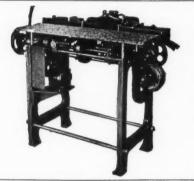
These functions are handled by correlated equipment designed with a particular view toward making progressive approaches from minimum to full mechanization completely practical. Photographs show typical plant installations and some of the more widely used equipment for paper bag packaging and handling.

Credits: Photos 1, 7, 8, 9 Stokes & Smith Co. Photos 2, 5, 14, 15, 18, 19
Pneumatic Scale Corp. Ltd. Photos 3, 16 Consolidated Packaging Machinery Co. Photos 4, 10A, 12, 17 Triangle Package Machinery Co. Photo 6 U. S. Automatic Box Machinery Co. Inc. Photos 10, 22 J. L. Ferguson Co. Photo 11 F. J. Stokes Machine Co. Photo 13 Holm Automatic Scale & Mfg. Co. Photo 20 Arenco Machine Co. Photo 21 Sanitary Dispenser Co.

464 PACKAGING CATALOG



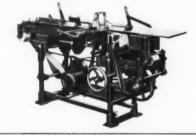
JUNIOR CARTON FORMING AND LINING MACHINE Sets up 35-40 cartons per minute One operator Can be made adjustable



JUNIOR CARTON FOLDING AND CLOSING MACHINE Closes 35-40 cartons per minute No operator Can be made adjustable



SENIOR CARTON FORMING AND LINING MACHINE equipped with AUTOMATIC CARTON AND LINER FEEDING DEVICE Sets up 55-60 cartons per minute Fully automatic



SENIOR CARTON FOLDING AND CLOSING MACHINE Closes 55-60 cartons per minute Fully automatic

why let



Type of cartons handled on these machines

your costs run away?

... in fact, you cannot afford to let a thing like this happen when in reality they can be reduced. These machines are built to handle your specific carton sizes provided you are or can use die-cut cartons similar to the one shown in the upper right hand corner.

You may desire to handle several carton sizes on the same machine or possibly only one size. In either case we can furnish machines to meet requirements.

These are only a few representative cartons being handled on this equipment but they cover several progressive industries who have found it economical to package the economical way.



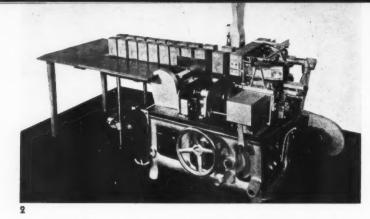
Send a sample of each size carton you are interested in handling and we will be pleased to recommend machines to meet requirements.

PETERS MACHINERY CO.

4700 Ravenswood Avenue, Chicago, Illinois

PACKAGING CATALOG





1. Predetermined weight scale. Conical cover prevents material from settling on weight platter. Courtesy The Jacobs Bros. Co., Inc. 2. Automatic check-weigher designed for inclusion in packaging line. Machine pushes out over-weight and under-weight packages. Correctly weighed containers proceed along belt. Courtesy Arenco Machine Co., Inc.

Check-weighing scales and devices

WIDE variety of devices have been developed to permit packagers to check and control the accuracy of fill of containers. These fall into three general groups: (1) check-weighing scales, (2) automatic weight-sorting equipment and (3) volume outage detectors.

In the selection of packaging and check-weighing scales, one of the essential things to consider is the proper scale for the particular job. In other words, a scale which is built with sufficient sensitivity for weighing 10-lb. packages would not have the necessary sensitivity for 1-oz. or 3-oz. packages. The same thing is true when packages run up to 50 and 100 lbs. The operation of the packaging and check-weighing scale should be automatic, so that the operator can easily tell when the correct weight is reached. Many scales offer quite a wide indicator travel per ounce, which means that the weight tolerance of the package can be kept down to the mere fraction of an ounce. This is highly important when the packages are very small.

In most check-weighing operations, it is desirable to have a scale which is light and portable and which can be moved around without the necessity of re-levelling. Most scales today will weigh accurately in any normal out of level position.

Just as care must be exercised in the selection of a scale to fit the particular capacity weighing job, so must the same care be used in seeing that the scale has been designed to be used under those particular working conditions. For example, in plants where moisture and steam are common, the same type of scale used to check and package flour and other dry materials could not be safely used with any assurance of continued scale accuracy and long service.

Check-weighing scales

For smaller packages ranging from a fraction of an ounce up to 100 lbs., the balance type of scale is most

commonly used for check-weighing. The development of an over-and-under weight indicator has made the balance type of scale especially well adapted for production and check-weighing of packages up to 100 lbs. This type of scale can be built to a high degree of sensitivity, is not seriously affected by machinery vibration and weighs correctly in any normal out-of-level position. The visible indication magnifies weight errors and makes it possible for any class of labor to give accurate weights. The scale is simple in structure, does not require a great deal of service and simplifies the process of weighing and of supervision.

There are a number of different models and types of over-and-under weight balances designed and constructed to take care of various commodities and packaging operations. For floor or low bench operations, a top reading dial can be provided. In some scales, the tower is inclined, thus setting the dial at the normal reading angle and relieving strain on the operator. In other types, the position of the indicator is arranged to increase greatly the speed of the scale. For unusual corrosive or acid conditions, special finishes are provided which lengthen the life of the scale.

In all of these various types, the scale dial shows the zero reading, which indicates the exact weight point. The dial may also be provided with weight graduations or tolerance marks. Where graduations are used, the operator or inspector is able to determine the amount of weight error in the package, thus affording a guide in adjusting the filling equipment. If the scale is used for checking different commodities, the dial may be equipped with adjustable mechanical tolerance markers.

It is important, in selecting scales, that these be of the proper capacity for the job at hand. For instance, a scale which is built with sufficient sensitivity for weighing 10-lb. packages would not have the necessary sensitivity for 1-oz. or 4-oz. packages.

For check-weighing larger packages, some type of

466 PACKAGING CATALOG

Automatic Weighers

FOR DRY, POWDERED OR GRANULAR MATERIA







No. 15-N

BAR-NUN "Auto-Check" WEIGHERS

Weigh and check-weigh recommended materials into all type containers. Extremely accurate. No. 10-N weighs from ½ ounce to ½ pound per discharge with accuracy guaranteed within ½, of 1 ounce plus or minus. NO. 15-N weighs from 2 ounces to 2 pounds, within ½, of 1 ounce plus or minus.



EDTBAUER-DUPLEX NET WEIGHERS

Made in sizes with capacities ranging from 1 ounce to 75 pounds per discharge. Grav-1 ounce to 75 pounds per discharge. Gravity feed models for free flowing and power feed for non-free flowing materials. Dependable, speedy, accurate and easy to adjust from one weight to another. Complete, self-contained units.

ACCURATELY WEIGH FROM 1/4 oz. to 75 lbs. per Discharge

THERE are 12 models or sizes of Edtbauer-Duplex and Bar-Nun "Auto-Check" Weighers, one of which will probably meet your requirements for weighing dry, powdered, or granular materials. They are simplified for dependability, flexible and economical in operation. Precision engineered, thoroughly tested and proved satisfactory, they assure you years of troublefree service. Let our competent engineers suggest the model and installation best suited to your needs.

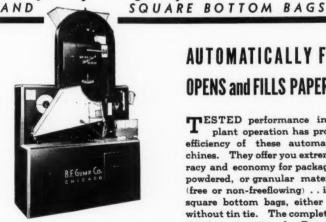
Bag Packaging Equipment

FOR ENVELOPE AND



No. 10-N WITH BAG FEEDER

For 2, 3, and 4 ounce bags. Automatically weighs, check-weighs, feeds, opens, fills and ejects bags at speeds ranging up to 33 per minute. Weights are extremely ac-Entire operation automatic. Equipped with fractional horsepower motors, drives and starting switches.



No. 15-N WITH BAG FEEDER

For $\frac{1}{2}$ and 1 pound bags. Speeds range up to 30 bags per minute. An "Auto-Check" Net Weigher complete with Bag Feeder, Opener, and Ejector.

AUTOMATICALLY FEEDS OPENS and FILLS PAPER BAGS

TESTED performance in actual plant operation has proved the efficiency of these automatic machines. They offer you extreme accuracy and economy for packaging dry, powdered, or granular materials . . . (free or non-freeflowing) . . in "V" or square bottom bags, either with or without tin tie. The complete operation is automatic: 1. Removes bag from magazine, 2. Opens it, 3. Holds under spout for check-weighed discharge, 4. Releases filled bag, 5. Ejects to table or closing machine. May we send you complete informa-

When requesting complete information on equipment for your requirements, advise: 1. Material to be weighed; 2. Size and type containers; 3. Speed and weights desired; and 4. Characteristics of electric current.

ENGINEERS AND MANUFACTURERS SINCE 1872 * 445-450 SO. CLINTON STREET, CHICAGO, ILL.



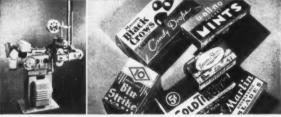
The answer to your

Packaging, like *selling*, calls for steady progress—more effective display, greater convenience for the user, better protection for the product . . . Leading package goods makers realize this, as you can see by the many new and striking packages that are regularly appearing on the market.

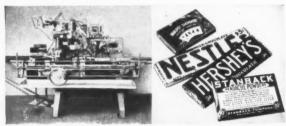
Our machines play an important part in carrying out such improvements—at lowest cost. Over a period of 28 years, we have developed more than 70 different models of wrapping machines for meeting various problems. You will most likely find the answer to your needs in one of these machines, or an adaptation of it. And



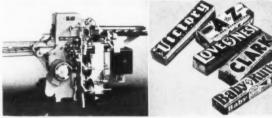
Model FA—Most widely used wrapping machine. Quickly adjustable for extremely wide size range. Handles open boats and flat objects as well as cartons. Uses any type of wrapping material.



Model CM-2—Designed especially for wrapping small cartons in transparent cellulose at extremely high speed. Speeds as high as 380 per minute are possible, depending on size of carton. Quickly adjustable for various sizes.



Model CA-2—Completely automatic machine for wrapping chocolate bars and other products. Handles printed foil, glassine, cellulose and other materials in roll form, making combination type wraps. Electric Eye locates printing. Adjustable for various sizes.



Model DF—A new machine built especially for wrapping irregular shaped candy bars. All forming and end-folding of wrapping material is done over breaker bars and tuckers, producing a uniformly sized, perfectly formed wrap irrespective of product shape.



Model S-2—The machine used by leading soap manufacturers. Handles many styles of wrapping. Adjustable for different sizes. Inserts cardboard or circular, if desired. Speeds up to 200 per minute. This machine has also been adapted to other products.



Model 22-B—Wraps candy in individual pieces. Handles hard candy or soft-center pieces in many sizes, odd and fancy shapes. Does combination type wrapping (for example, inner wrapper of foil, outer wrapper of transparent cellulose).

PACKAGE MACHINERY

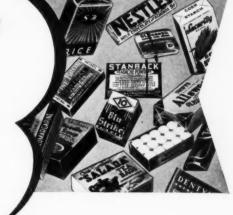
wrapping problems

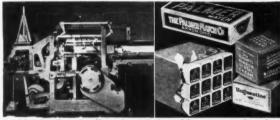
we are always glad to have our Engineering and Designing Department work on new developments which may call for special machines.

Can your package be given greater selling force? Can your costs be reduced? We'll be glad to give you the answer to these important questions—an answer backed by a wealth of experience gained in serving America's leading producers of package goods. Consult our nearest office.

PACKAGE MACHINERY CO., Springfield, Mass. NEW YORK CHICAGO CLEVELAND LOS ANGELES TORONTO

Buenos Aires, Argentina: David H. Orton, Majpu 231
Peterborough, England: Baker Perkins, Ltd. Melbourne, Australia: Baker Perkins, Pty., Ltd.





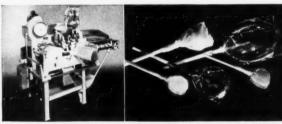
Model F Bundlers—Bundle packages in lots of from 2 to 24, depending on size of packages. Eliminate expense of packing in costly cardboard boxes. Register printed panels accurately. Attach end-seals. Some types may be adjustable for bundling cartons of different sizes.



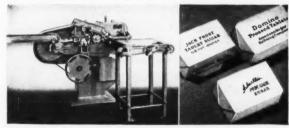
Model CM-T—The machine that wraps leading cigarette packages in "Cellophane," with easy-opening tape. End of tape, instead of being laid down flat, is turned up, so that it is easily grasped. Speeds up to 250 or more per minute.



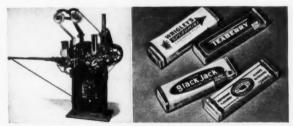
Nifong Sealing Machine—A new machine designed especially for sealing the lids of tobacco tins with special Scotch Acetate Fibre Tape. Prevents loss of moisture, keeping tobacco factory-fresh.



Model LP-2—Designed for wrapping pops of various sizes in rectangular, round, oval, pear or ball shape. Speed, 110 to 120 per minute. Uses waxed paper, glassine or transparent cellulose in roll form.



Model HY-3—Wraps cut or lump sugar and similar rectangular articles. Handles either paper wrappers, gluing end-folds, or waxed paper, heatsealing seams. Machine may be built for different sizes. Speed, 100 per minute.



Model AC—Makes the standard chewing gum package, performing all operations. Wraps and bands each stick individually; assembles five sticks, then bands package with printed label and applies "Cellophane" wrap with easy-opening tape. Operates at 600 sticks per minute.

COMPANY

Over a Quarter Billion Packages per day are wrapped on our Machines

beam scale or a dial scale is generally used. A recent development, which tends to make the beam scale well adapted as a packaging scale, is that of an over-and-under weight indicator. This serves the same purpose to the beam scale as the over-and-under weight dial does to the balance scale.

In hand filling, it is of course essential that all packages be weighed. Automatic weighing fillers are subject to occasional variations for reasons which are difficult to control. Periodic check-weighing (every 10th or 100th package, as need indicates) is, therefore, usually resorted to as a check of the continuing accuracy of fill. Volumetric fillers require check-weighing not merely as a check on the machine, but because of variations in the density or rate of flow of the material being filled.

Automatic weight-sorting equipment

Where need requires, it is sometimes found desirable to utilize automatic equipment to sort packages by weight.

One type which has achieved fairly wide usage is set into the conveyor line so that packages are passed over a weighing pan. Each package is momentarily lifted from the conveyor chains for weighing. On the opposite end of the scale beam, a pan carries a standard weight container against which each successively produced package is to be tested. Containers which balance or over-balance the standard container are redeposited upon the chain and carry straight along the conveyor line without interruption. Containers of insufficient weight to balance the standard are automatically shoved off the conveyor by a pusher bar. This unit is designed to permit either continuous or intermittent use. It may be thrown in or out of operation by a clutch handle.

Another type of sorting scale is used to examine packages prior to filling rather than filled containers. Since the weighing of a filled container gives only a check on the total weight, it is sometimes desirable—and even efficient—that the weight of the container itself be predetermined, since variation from the norm on the part of the container will introduce an opposite

variation in the quantity of product required to bring the filled package up to the predetermined weight.

Articles to be check-weighed are fed to the scale which pushes aside the under-weights or the over-weights to pass on to the filling machines. Since light packages are separated from heavy containers, it is possible, at a later time, to reset the scale, make compensating adjustments on the filling machines and thus to utilize both the light and heavy containers if these occur in appreciable quantities.

Volume outage detectors

Perhaps the simplest of checking devices-in principle, if not necessarily in construction—are the so-called outage detectors which are used to determine the level of fill of dry product cartons. These are of various types-straight line and rotary-all using the principle of the mechanical finger which is inserted into each package. Should the finger find itself able to descend further into the body of the package than a correct fill would permit, a mechanism is set in motion which throws the package off the line. Straight-line detectors are located at the delivery end of high-speed weighing machines and check packages as they leave these units. One type automatically stops the weighing machine if packages pass through which are not filled to the correct height. The machine operators then carefully examine the weighing unit and the trouble is located on the particular scale where the error has occurred.

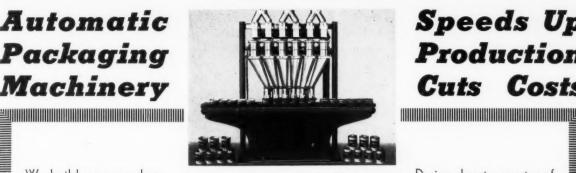
Another straight line type utilizes a circular disc, set vertically above the packages on the conveyor line, with a series of pendulums or hanging members. This is set so that if the material is up to the desired height in the carton, a hanging member comes to rest on the top of the material and is pushed up slightly as the disc moves down. If, however, the material is below the desired height in the container, contact will not be made with the hanging member. Failure to make this contact permits a throw-out switch to operate, causing a pusher device to throw the faulty package out of the line.

3. Pre-determined weight scale for packaging and check-weighing. Over-and-under chart. Poise locks to prevent movement during operation. Courtesy Toledo Scale Co. 4. Check-weighing scale utilizing illuminated frosted glass chart, suitably graduated, instead of mechanical indication. Courtesy The Exact Weight Scale Co.





Automatic **Packaging** Machinery



Speeds Up Production Cuts Costs

We build over one hundred different kinds of automatic and semi-automatic packaging machines. Whatever your problem, you'll find our experience of great value to you.

We build machines for

making cartons, round

paper cans, shrinkers,

paper caps, round paper can labeling machines

and tube gluers, etc.

PACKOMATIC SIX IN LINE AUTOMATIC WEIGHER

PACKOMATIC P-T CARTON SEALING AND FILLING MACHINE

We manufacture semiautomatic carton sealers, adjustable carton sealers, and high speed automatic combined Top and Bottom carton sealers.

During almost a quarter of

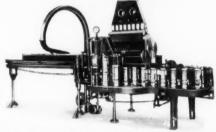
a century hundreds of

manufacturers and packers throughout the world

have been added to our

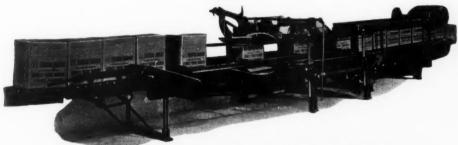
satisfied customer list, by adopting "The PACKO-MATIC Way."

Expert confidential consideration will be given to your particular prob-



PACKOMATIC TOP AND BOTTOM AUTOMATIC CARTON SEALER, WITH OR WITHOUT CARTON FEED

Phone, write or wire for one of our Engineers. You will not be obligated.



PACKOMATIC MODEL "D" GLUER AND 10 FT. COMPRESSION UNIT

The PACKOMATIC Shipping Case Gluer and Sealer is original with us. We built the first commercial unit, and it has continued to lead the field. New modern features have been added year by year to meet requirements.

The automatic Top and Bottom Sealers; Top Sealers only or Bottom Sealers only; Skip Glue, Spot Glue, or all-over glue application to meet your particular problem. Any length top and bottom driven compression desired.

REPRESENTED IN ALL PRINCIPAL CITIES

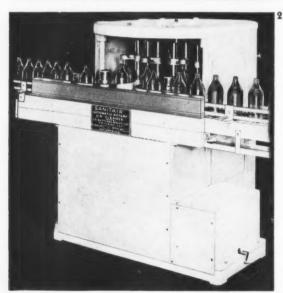
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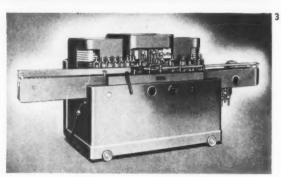
PACKOMATIC J. L. FERGUSON COMPANY, JOLIET, ILLINOIS

PACKOMATIC PAYS DIVIDENDS

Bottle cleaning equipment

O prevent contamination of their products and to comply with food and health laws, manufacturers find it necessary to clean bottles prior to filling. Those using all new containers desire to remove lint, dust and any glass chips that may enter the container be-





tween the time of its manufacture and the time of its use in the packaging plant. Those using a returned bottle—as in the milk and beverage industries—of course find thorough washing and sterilizing of such containers an absolute essential. Cleaning equipment is of three general types: air cleaners, rinsing machines and soaking, rinsing and washing machines.

The two former types are recommended only for the thorough cleaning of new glassware not requiring sterilization at the point of filling. When second-hand or returned bottles are being used, only a thorough soaking and washing in sterilizing solutions, followed by a careful drying, can be recommended.

Air cleaning

Where glassware comes directly from the factory, cleaning by compressed air has been found satisfactory in numerous plants, particularly provided the glassware has not been exposed—outside of closed shipping containers—to grime or grease.

Air cleaners of both hand operated and automatic types are available. In the non-automatic type, the operator places two bottles at a time against air tubes, arranged to provide a blast of air whenever the pressure of the bottle necks is applied. From 60 to 80 lbs. of compressed air pressure is utilized and dirt, lint and grease are thus literally blown out of the bottle. Such machines can be operated at a speed of from 30 to 40 containers per minute, depending on the skill of the operator and the size of the container.

Automatic machines of various types are also available. In some instances, rotary machines very similar to bottle filling machines are utilized, receiving the bottles directly from a conveyor and cleaning them while in upright position. They are discharged, one by one, back on to the conveyor, by means of a star wheel.

Another type takes bottles, inverts them for cleaning, replaces them, clean, in upright positions—all continuously—and discharges them by means of star wheel arrangement.

1. Fully automatic straight line air cleaner. Bottles are inverted six at a time over cleaning heads. Courtesy Pneumatic Scale Corp., Ltd. 2. Automatic rotary air cleaner. Courtesy U. S. Bottlers Machinery Co. 3. Automatic rotary bottle cleaner. Containers are inverted over air blast mechanism. Courtesy The Karl Kiefer Machine Co.

472 PACKAGING CATALOG



SPEEDWEIGH

 bringing new Speed, ACCURACY and Dependability to packaging, check-weighing, and testing operations.

ONLY THE SPEEDWEIGH
BRINGS YOU ALL THESE IMPORTANT FEATURES:

Toledo Accuracy
—precision-built for
dependable performance
High Sensitivity
—1/64 ounce moves indicator
No Need to Level
—ready to use anywhere

Lock Poise
—cannot be moved accidentally

Carrying Handle
—fits flush when not in use

Stainless Steel Beam
—clear, etched figures

Light Weight
—major parts of die-cast
aluminum

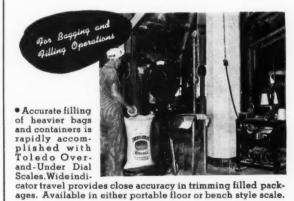
Capacity 5 lb.



to-read chart for highest accuracy in packaging, checking operations. No need to level scale. In-built carrying handle.



are available. Scale automatically dumps correct weight of material being packaged. Rapid and highly accurate.



eToledo "1500"
floor scales are
ruggedly built for
receiving, shipping and general
heavy weighing.
Highly accurate.
May be equipped
with Toledo Printweigh for indisputable printed weight
records in either tape or ticket form, or combination of both.

TOLEDO SCALES

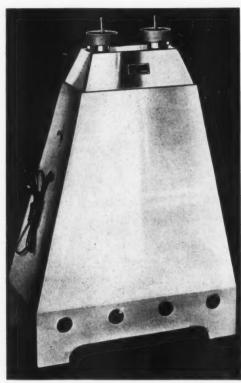
1025 TELEGRAPH ROAD . TOLEDO, OHIO

CANADIAN TOLEDO SCALE CO. LIMITED, TORONTO, ONT.



SALES AND SERVICE IN 181 CITIES, U.S.A. AND CANADA





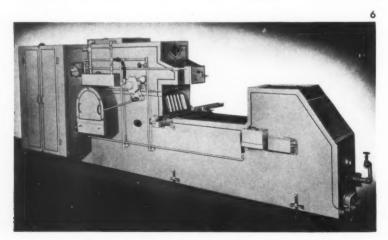
4. Automatic ampoule washer and sterilizer, utilizing rotary motion. Photo Courtesy The Lakso Co. 5. Two-tube air cleaner with compressor pump. Operator inverts bottles over air blast heads. Photo Courtesy U. S. Bottlers Machinery Co.

Another type of machine receives a group of bottles from the conveyor on to a barrel-like holding device and then proceeds to invert these bottles over air nozzles. Cleaning is thus accomplished while the bottles are held in inverted position. While one set of bottles is being cleaned, the preceding set, at the opposite side of the drum, is being returned to the conveyor and a third set being received, immediately thereafter, by the drum.

Air cleaning equipment is sometimes incorporated as an integral part of a bottle filling machine.

Bottle rinsers utilize a spray of water-sometimes

heated and sometimes including sterilizing solutions, to rinse both the inside and the outside of inverted containers. Some of the rotary table type consist of a large number of spouts mounted on a rotary table. The operators invert bottles over these spouts which then pass under a hood where interior and exterior sprays are applied. Machines of essentially similar principle are also manufactured using a straight line conveyor or a chain conveyor, designed to carry one or more rows of bottles through a rinsing hood where both interior and exterior rinsing is performed.



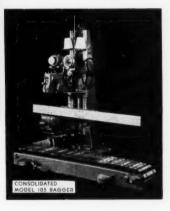
6. Five-wide automatic bottle washer. Soaking and washing machines are designed for the complicated cleansing problems of returned bottles, such as milk and beverage containers. Photo Courtesy Liquid Carbonic Corp.

474 PACKAGING CATALOG

* PACKAGING * And Delense * Matienal Delense *



SEALTITE PASTED CLOSURE EQUIPMENT FOR SMALL BAGS. A Sealtite closure gives added sales appeal to any paper bag package. Uses any make of gusseted bag. Shows surprising reductions in packaging costs.



CAPEM AUTOMATIC SCREW CAPPING EQUIPMENT. Designed to handle any type of modern cap or closure. Sorts, feeds and applies practically any size screw cap, broken thread cap, shallow or deep-skirted cap of metal or plastic o

HOEPNER AUTOMATIC SCALES, BAG CLOSERS AND FILLING MACHINERY. Sugar, selt and all types of heavy chemicals, as well as grains and feeds of every description are weighed, accurately and economically on a wide

The part packaging is called upon to play in the National Defense effort is a most important one. Not only munitions, but also foodstuffs, drugs, chemicals and other materials vital to the defense of Democracy, require some form of packaging. We are proud that Consolidated equipment is doing its share, not only by speeding up production in countless defense plants but also by releasing hundreds of packaging operators for primary defense work.

Everyone recognizes that national defense needs must be satisfied before everything else. Consequently a large part of our capacity is now devoted exclusively to producing equipment for the U. S. Ordnance Department, and plants cooperating in the National Defense Program. We regret, therefore, that under existing conditions we are unable to give our good customers in non-defense industries the prompt service that they have been accustomed to receive.

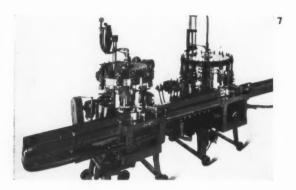
We ask, therefore, that you who are users of Consolidated equipment bear with us through this emergency. We give you our assurance that, insofar as possible, we shall maintain our service on machines now in operation, and it will be our aim to resume production of our standard line of Consolidated cappers, scales, sewing heads and bag closing machinery at the earliest possible moment.

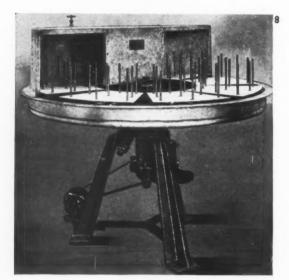
CONSOLIDATED

PACKAGING MACHINERY CORP.
1400 WEST AVE.
BUFFALO, N. Y.

Soaking and washing machines

Soaking and washing machines were designed to meet the far more complicated cleaning problems involved in the use of multi-trip containers. Such containers frequently require the removal of an old, stained





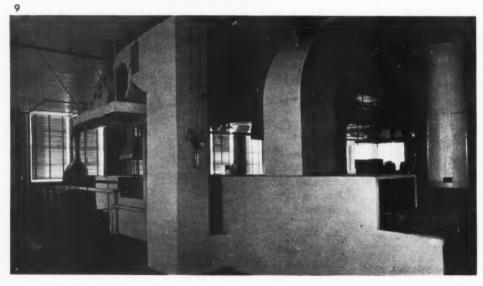
or torn label. They have often been used—while in the field—to hold products ranging from kerosene to fats. They have had opportunity to collect every sort of contamination—germs, dirt, grease and grime—and thus require the most effective form of thorough cleansing and sterilization.

Machines of this sort usually first rinse the bottle to flush out loose dirt, flies, etc., and to pre-heat the bottles for the high temperature solutions in the following processes. Soaking in hot alkali solutions then follows, to remove effectively labels, adhesives and all forms of dirt deposits. Frequently brushing devices for both interior and exterior of bottles are included as an integral part of the machine. The final step consists of rinsing of both interior and exterior, to remove all cleaning solutions and then draining and, in some instances, drying.

Machines vary in size to meet varying production needs and use chain belts equipped to hold anywhere from one to twelve or more bottles per link. Feed and discharge may be automatic and directly off a conveyor, semi-automatic by means of a magazine feed or hand fed in some instances.

Production speeds vary with the width of the machine, i.e., the number of bottles held per link of chain or belt, and with the size and type of container. Thus an essentially identical machine designed with a four-bottle-wide belt will have a capacity of from 24 to 32 bottles per minute, whereas an eight-bottle-wide belt machine will have a capacity of from 48 to 64 bottles per minute.

7. Rotary air cleaner used in conjunction with rotary vacuum bottle filler. Courtesy The Karl Kiefer Machine Co. 8. Rotary bottle washing table. Bottles are placed on table and removed by hand. Courtesy F. J. Stokes Machine Co. 9. Bottle rinsing, washing and drying machine. Note trays permitting use for wide range of bottle sizes. Courtesy U. S. Bottlers Machinery Co.



PACKAGING CATALOG

CARDING PACKAGING SHIPPING

in to

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to rt or

of

h 18

Nearly 800 different BOSTITCH models to furnish the equipment that exactly suits your needs.

BOSTITCHING"

is the use of the right stapling, stitching or tacking machine and the exact size and kind of staple to get the most efficient fastening results.



Place staples as much as 18 inches from the edge of card.



TACKERS Plunger drive or gun type operation. Shoots staple accurately at any spot.



sizes. Accurate control of work.



STITCHERS 85 models. Makeown staples from coil of wire. Continuous fast work in large volume.

WIRE

BOX BOTTOMERS STAPLERS

rapid bottom sealing. No weight. ing or waiting. No loosening from moisture or rough hand-



BOX BOTTOMERS, STITCHERS For use as above. Eco-

ror use as above. Eco-nomical where pro-duction runs high. Make own staples from coiled wire.



PLIER STAPLERS For greatest portability. Work done where it stands. Ideal fas-flexible corrugated

wrappings.

LIGHT PLIERS

For light box and bag fastening. Fit pocket or can hang from one finger.

TOP SEALERS

Bostitch Auto. clench seals filled cartons from outside. No blade to insert. Staples tops and bottoms.



SELF-FEEDING HAMMERS

One hand — one blow. Place and drive staples with short, quick wrist-strokes.



HEAVY-DUTY HAND STAPLERS

Powerful penetra. tion, easy operation.

METAL STITCHERS

For any kind of heavy stapling work. Will stitch through sixty onethousandths of cold rolled steel and thicker soft metals.



QUICK, ECONOMICAL CONTAINER SEALING

Greater speed cuts costs, Instant oreater speed cuis costs. No more sealing avoids waiting. No more loss and damage due to seal being weakened by moisture or rough handling. Pilferage discouraged by making it detectable. Let Bostitch solve your fastening problem.

BOSTITCH 48 Division Street, East Greenwich, R. I., U.S.A.

CARDING

FOR DISPLAY

Bostitch machines and sta-

ples can handle almost any

carding job. Fastening is

neat, unobtrusive, and firm.

Economy comes through

18 Bostitch research en-

gineers and 300 field rep-

resentatives in over 100

U. S. and Canadian cities

bring you skill, experience,

and a complete line, to

provide the best solution

to your problem. Tradein, rental, and budget pur-

chase plans - whichever best suits your needs. Write for detailed information, sending samples or describing your fastening

problem.

speed in application.

BOSTITCH - CANADA, LTD., Montreal

it better with wire 1. SALES APPEAL

GIVES YOU ALL THREE IN ONE FASTENING METHOD

2. PROTECTION 3. ECONOMY



MATERIAL: Powders, granular

products, pastes

CAPACITY: 1/2 oz. to 5 lbs. - any

container

PRODUCTION: 15 to 30 per minute

OPERATORS: One

Filling by gross weight, volumetric measurement or packing.

Write for literature on



WOUNTERSAL FILLER



MATERIAL: Powders, granular products, pastes 2

CAPACITY: ½ oz. to 15 lbs.—any

PRODUCTION: 10 to 20 per minute

OPERATORS: One

Filling by gross weight, volumetric measurement or packing.

Write for literature on



SES HEAVY DUTY FILLER

MATERIAL: Powders and granular products 3

CAPACITY: 1 oz. to 5 lbs. - cans, boxes, canisters

PRODUCTION: 20 to 120 per minute



OPERATORS: One

Filling by gross weight, volumetric measurement, or combination of both.

Write for literature on



SES AUTOMATIC DOUBLE UNIT FILLER



MATERIAL: Salted nuts, candies, small crackers, powders, and individual pieces

CAPACITY: 1/8 oz. to 1 lb. Cellaphane, Pliafilm or other heat sealing material

PRODUCTION: 50 to 60 per minute

OPERATORS: One

Filling by measurement or by auger.

Write for literature on





STOKE SESMITH @ PHILADELPHIA





CONVEYOR NET WEIGHT SCALE

MATERIAL: Powders, cereals, seeds, chemicals, CAPACITY: Envelopes 2" to 8" high, when closed PRODUCTION: 60 to 120 per minute OPERATORS: None. Entirely automatic. Connects with and seals filled envelopes from pow-der filler or net weight scale

Cracker Meal

BAG AND ENVELOPE SEALER

MATERIAL: All food and gracery products in

CAPACITY: Maximum carton: 1012" x 612" x 412" Minimum corton: 234" x

PRODUCTION: 40 to 75 per minute

OPERATORS: One Several Models. Feeds cartons, bottom seals, fills, top seals.



MATERIAL: All food and grocery products CAPACITY: Maximum carton: 10" x 612" x 4"



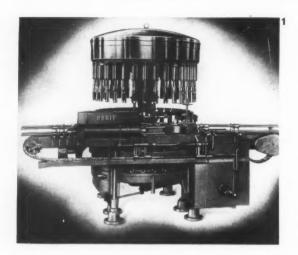
. Minimum carton: 334" x 112" x 1" PRODUCTION: 60 to 70 per minute OPERATORS: One Automatically tight-wraps carton with printed label, after it is filled and sealed, making attrac-

tive, siftless tightwrapped package for all products.

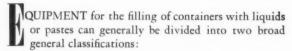
STOKES ESMITH @ FRANKFORD PHILADELPHIA

AUTOMATIC TIGHT

Filling liquids and pastes







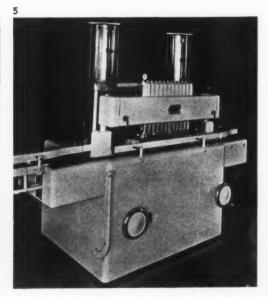
- Metering machines—which deliver to the container by:
 - (a) A measured volume.
 - (b) A measured weight.
- Constant level machines—which fill the containers to a uniform height as measured from:
 - (a) The bottom of the container to the liquid level at the top.
 - (b) The top of the container to the liquid level.

Metering machines are used principally for viscous or semi-liquid products. The constant volume type consists basically of an accurate pump of either piston or

1. Thirty-two valve automatic feed and discharge rotary filler. Courtesy Horix Mfg. Co. 2. Straight line semi-automatic vacuum filler. Courtesy U. S. Bottlers Machinery Co. 3. General purpose filler for thick liquids and pastes. Courtesy F. J. Stokes Machine Co. 4. Auger fed filler for pastes and viscous materials. Container capacity up to 18 in. in height. Courtesy Stokes & Smith Co. 5. Automatic vacuum filler for bottles and cans; equipped with variable speed drive to permit adjustment to speeds of other machines in the line. Courtesy Pneumatic Scale Corp., Ltd.







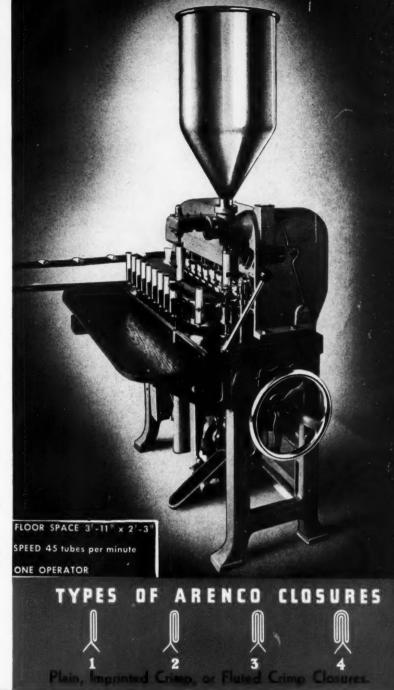
480 PACKAGING CATALOG

THE ARENCO TUBE FILLER

Fills, closes and seals collapsible tubes... interchangeable to handle pastes, creams, lotions and liquids . . .

FEATURES . . .

- Automatic cap tightener.
- No material delivered from filling nozzle when tube is missing. No tube—no fill.
- Clean filling—no spattering of inside closure wall no material trapped in fold.
- Positively correct quantity in each tube.
- Simple adjustments for different quantities and easy changing from one tube size to another.
- Shaped tube holders—shapes of tubes and folds always uniform.
- Ample passage for material—no valves—no squeezing to interfere with consistency and viscosity of material.
- All parts of machine easily accessible for control, lubrication, and cleaning.
- Quiet in operation.



OTHER SPECIAL FEATURES

- Automatic tube cleaning before filling.
- Automatic safety clutch. Machine stops instantly in case of damaged tube or other obstruction.
- Special valve for the filling nozzle for feeding of semi-fluid and easy flowing materials.
- Automatic registry of print; automatic batch numbering and secret marking.



AN EXAMPLE

of a special Arenco job

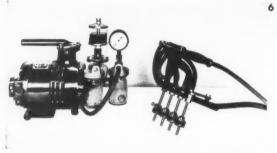
1/2 pint single service coffee-cream tube.

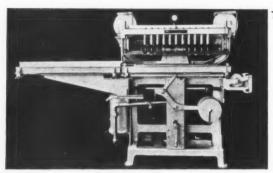
There are Arenco machines for many other packaging operations and for special and exacting requirements in other fields.

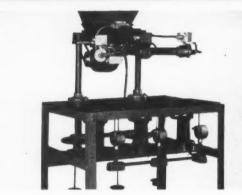
THE ARENCO

2 5 WEST 4 3rd STREET

NACHINE COMPANY NEW YORK, N. Y.









6. Portable vacuum type filler equipped with four valve filling heads. Courtesy Horix Mfg. Co. 7. Semi-automatic vacuum filler for bottles and cans. Courtesy Pneumatic Scale Corp., Ltd. 8. Multi-head paste filler for hot and cold semi-plastic products. Courtesy The Vol-U-Meter Co. 9. Gravity type liquid filler with eight filling spouts. Courtesy Scientific Filter Co.

rotary impellers and is obtainable as hand operated, semi-automatic or full automatic equipment.

The hand operated units are generally constructed with a piston pump, a hopper in which is loaded a batch of the material to be filled and a spout to which the operator presents the containers in time with the stroke of the piston. On some products, it is necessary to keep the tip of the spout immersed in the fluid as it is ejected into the container, thus eliminating air pockets. In the hand operated machines, the operator is relied upon to lower the container away at the proper speed in order to accomplish this end.

Semi-automatic and full automatic machines of the piston type operate on a similar principle, except that two or more piston pumps are utilized along with a conveyor which intermittently carries the containers forward. A cam operated table raises the containers at the filling station and lowers them away in timed relationship with the piston stroke. The containers can be automatically discharged on to a conveyor for subsequent packaging operations.

Machines are also available of the full automatic constant motion rotary type. This type of equipment can be hand fed by an operator placing empty containers on the trays of the machine. This construction is usually recommended where there is a wide variety of shapes and sizes to be handled. These machines can also be automatically fed and are well adapted to conveyor line operation where there are previous and subsequent operations to be performed. For this purpose, a star wheel is utilized and the containers are removed from the conveyor thereby and automatically returned to the conveyor after the filling operation has been completed.

There are two general constructions of the rotary type machine. In one there is a series of piston pumps mounted above and rotating with the containers, so that each stroke of a piston fills the container below it. In the other there is a pump of the rotary impeller or piston type, depending upon the product to be handled, and a valve head arranged so that the entire discharge from the pump is ejected into one, and only one, container at a time. In recent years, this type of equipment has been greatly improved so as to give greater speed, cleaner filling and a wide capacity range with minimum changeover time. There have also been added no jar-no fill and other safety devices, so as to render the equipment fool-proof. The rotary impeller pump has the distinct advantage of a constant velocity of material flowing through it in one direction, so as to minimize its wear and thereby indefinitely hold its accuracy.

Constant weight measuring equipment contains a scale as an integral part of the machine. As the container is filled to a point where it is equally as heavy as a predetermined weight placed on the other platform, the balancing of the scale causes the filling valve to be tripped and the flow then stopped. These units are principally of the hand operated type and generally give no greater speed than an operator can obtain with a

Redington Packaging Machines

have a 45-year record of packaging jobs well done for practically every type of product



CARTONING MACHINES

• Consult Redington for automatic cartoning of practically any solid item. Machines are available for inserting bottles, jars, collapsible tubes, razor blades, candy coated gum, oleomargarine, macaroni, soap and almost any other solid item or container in glued-end or tuckend cartons. Redington Cartoning Machines can be equipped with circular mechanism for automatically handling printed advertising matter—means for code stamping carton—means for printing on cartons—mechanism for other features such as placing a corrugated protector around bottles.

WRAPPING and CELLOPHANE WRAPPING

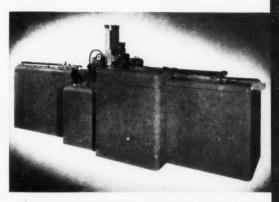
◆ Consult Redington for high speed wrapping machines for handling products in Cellophane, Sylphrap, wax or glassine paper and other wrapping materials. Redington Wrapping Machines can be equipped with mechanism for applying "Easy Opening Tape"—with photoelectric cell mechanism for controlling cut-off of printed design—with special mechanism for handling government stamps for tobacco packages, and with many other special mechanisms.

Combination CARTONING and WRAPPING

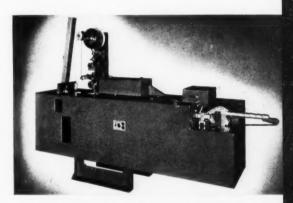
• Consult Redington for machines for such items as the new Schick Injector package, candy coated gum and other packages where it is advisable to carton and wrap on the same machine. Photoelectric cell mechanism for registering printed wrapping material, and easy opening tape mechanism are available.

SPECIAL PACKAGING

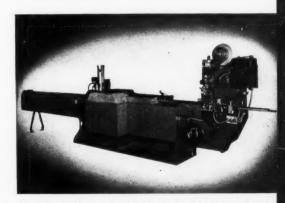
● Consult Redington for packaging machines that defy classification . . . the unique wrap of Listerine, the double wrap for Crystal White Soap, the interlocking wrap for tins of Underwood's Deviled Ham, the Phillips Milk of Magnesia package, Bayer's tins of Aspirin, Life Savers, professional and sample envelopes for Bayer's Aspirin and Grove's Laxative Bromo Quinine.



Type 23 Continuous Loading Cartoning Machine for handling Fitch's Ideal Hair Tonic. Same type machine built for items shown at the left, as well as for many other products.

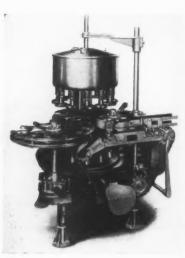


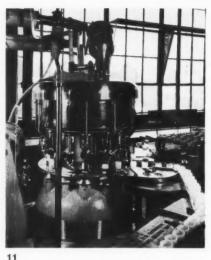
Type 96 high speed Cellophane Wrapping Machine with means for applying Easy Opening Tape. Machine shown was built for wrapping cigarette packages. Available for high speed wrapping of similar items.

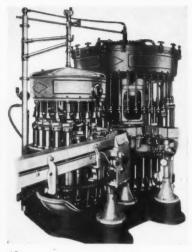


Type 23 Continuous Loading Cartoning Machine combined with Cellophane Wrapping attachment. This combination unit not only inserts article into carton but also wraps closed carton in Cellophane.

F. B. REDINGTON CO. (Established in 1897) 108 So. Sangamon St., CHICAGO, ILL.







10

12

10. Twelve-valve automatic rotary filler, gravity type, for soups, syrups, fruit juices and saucing of beans, etc., in open top cans. Courtesy Horix Mfg. Co. 11. Predetermined level filler for free flowing products. Fills to a pre-set point in container. Courtesy Food Machinery Corp. 12. Forty-spout liquid low pressure filler with twenty-spout syruper attachment. This equipment is generally used in the soft beverage field. Courtesy Liquid Carbonic Corp.

hose with nozzle-valve, but offer the distinct advantage of clean and accurate filling.

The constant level equipment is principally used for light, free-flowing liquids. The siphon filler was the earliest design in this category and is still used for some hand operated units. In these machines, the container is filled until the liquid level therein is the same as that in the float controlled supply tank. There is no overflow to be handled with this method.

Direct pressure machines require that the neck of the container be sealed, usually with a rubber stopper through which passes the filling stem. This stem contains both liquid and air passages so that, as the product flows through under a gravity head pressure which may vary between three and fifteen feet, the air is permitted to escape. When the container is filled, the air escapes by the passage provided in the filling tube, the liquid then begins flowing out through that passage, but, since the opening is small, it runs at a greatly reduced speed. This type of equipment is faster than the siphon units and is obtainable in all sizes from hand operated to full automatic.

Drip and the filling of defective containers can be prevented by the use of a variant of the direct pressure construction known as the "gravity vacuum." design the supply tank, mounted above the filling tubes, is kept under vacuum, so that vacuum must be created in the container before the liquid can be permitted to flow into it by gravity.

In full automatic equipment, the straight vacuum, the gravity-vacuum and gravity principles are frequently used. In the vacuum construction, the float controlled supply tank is mounted below the filling tubes. The containers are sealed, as in the direct pressure units, and the air withdrawn from them. The reduced pressure thus produced causes the liquid to be drawn into the containers, the overflow going out through the air tubes just as in the pressure machines. The liquid is separated from the air by an automatic trap, the liquid being returned to the supply tank and the air going out through the vacuum pump. These machines are available in all sizes from hand operated units to completely automatic.

Into full automatic liquid filling equipment there have been incorporated, in the last few years, many safety devices which make for smooth, top speed operation with a minimum of stoppage. Machines have devices guaranteeing protection against damages otherwise resulting from carelessness on the part of the operator or from choke-neck or misshapen containers or even the stopping of other machines in the line.

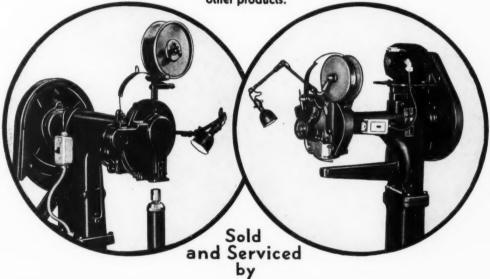
Operating speeds of filling machines of the automatic varieties have been substantially speeded up during the past few years, machines now in operation in some plants working at speeds of as high as 300 14-oz. bottles per minute. Of course, speed-while of great importanceis but one of a number of considerations by which a filler should be judged. Among other important factors are ease of adjustability and ease of cleaning. Machines for foods and chemicals are often made with stainless steels or other reaction-resisting materials on all parts coming into contact with the material being filled.

Semi-automatic units are generally of the straight line type through which the containers are advanced intermittently. Full automatic equipment of both the straight line and rotary types is obtainable.

BOSTON-BLISS-LATHAM

WIRE STITCHING MACHINES CORRUGATED AND SOLID FIBRE SHIPPING CASES

Matches, Milk Bottle Caps, Pocket Books, Belt Loops, Luggage, Toys, Sheet Metal, and a Large variety of other products.



330 West 42nd St., New York, N. Y.

BOSTON 185 Summer St.

PHILADELPHIA

CHICAGO 117 W. Harrison St.

CINCINNATI

BOX STITCHERS



Bliss Heavy Duty Box Stitcher

Built for heavy duty work on all grades and thicknesses of boxboard used for corrugated and solid fibre shipping containers; rugated and solid fibre shipping containers, suit also suitable for telescope containers, suit boxes, set-up boxes, folding boxes, eracker caddies, display boxes, etc. Clearance between the stitcher head and clinching anvil, $1^{b}/s''$. May be equipped with tables or gauges. Bliss 90° or 45° Stitcher Head; uses standard ribbon and Hybar wires, also other flat and round sizes. Throat lengths—15'', 25'' or 33'' and longer.



Improved Latham No. 34 Box Stitcher

Improved Latham No. 34 Box Stitcher

This new Latham is a moderately priced machine for stitching the regular run of boxes, containers and bags used by mail order, clothing and metal trades manufacturers, and similar industries. Working parts are stronger and heavier than those of previous models, and concealed for protection against dust and grit.

Uses .017 or .020 ribbon wire; No. 1 or No. 2 Hybar wire. Crown of stitch, 7/16". Capacity .360 inch. Speed up to 300 Stitches per minute. 1/1 HP Motor. Throat length, 12".



Boston No. 10 Box Stitcher

BUSION INC. 10 DUA SUILING

A light model machine equipped with the Boston No. 26 Narrow Stitcher Head. Adapted for light stitching operations, either on boxes or flat work such as bag sealing and attaching articles to cards. Wire used, 21 × 25 flat or 25 to 28 round. Work up to 1/4" in thickness may be stitched. Crowns may be furnished for 3/4" or 1/6".

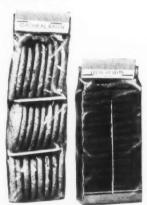
³/_s" or ¹/₂".

Machine may be equipped with standard table. Distance from stitch to inside edge of frame is 10 inches.

SAMPLES OF **BOX STITCHING**



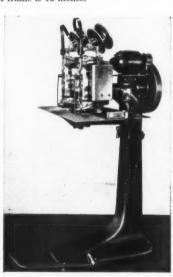
Folding Suit Box







FOLDER COMPANY 330 West 42nd Street, New York, N. Y.



Boston Multiple Head Stitcher

Uses No. 15 Type Heavy Duty Boston Stitcher Head. Heads are adjustable sidewise, with a minimum spacing of 3" from center to center, and maximum spacing up to 16". Uses 1/2" crown stitch. Drives all sizes of ribbon and Hybar wire, also other flat and round sizes. Used for stitching suit boxes, cartons and other types of folding or set-up boxes, and for any other stitching requiring two or more stitches uniformly spaced. Available with solid clincher or moving clincher as ordered.

clincher as ordered.

BOTTOM STITCHERS



Bliss Heavy Duty Bottom Stitcher

Equipped with Bliss Heavy Duty stitcher head. Recommended for stitching the bottoms of regular slotted containers, and other types of one piece boxes and many other purposes, where maximum production is required.

The rugged construction of the Bliss Bottom Stitcher assures long service on heavy duty work.

Built in two sizes: 15" or 25" throat.



Improved Latham No. 34-B Bottom Stitcher

A moderately priced stitcher for bottom stitching the lighter grades of corrugated and solid fibre shipping containers in all the usual sizes. Heavy duty working parts are larger and stronger than those of previous Latham models. Formers and drivers are readily removable and reversible. Stitcher head is removable as unit. Reliable ring type clutch. Uses .017 or .020 ribbon wire; No. 1 or No. 2 Hybar wire. Crown of stitch, 7/16 inch. Throat, 12". Speed up to 300 stitches per minute. 1/4 HP motor.



Bliss Heavy Duty Duplex Stitcher

Drives two stitches simultaneously, enabling a production 50% to 60% greater than is possible with the single head stitchers, without increasing the labor cost. One operator can stitch 6 to 12 boxes per minute. With two operators, production may be increased to as many as 18 boxes per minute.

per minute. Built in one size with 15" throat length.



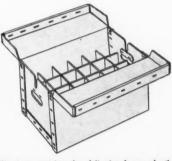
Bliss Box and Bottom Stitcher

This is a general purpose machine popular In its a general purpose machine popular in plants using both regular slotted containers and various styles of telescope and Bliss boxes. Boxes can be assembled on the box arm; regular slotted containers can be bottom stitched on post. Change can be made in one minute. Built in two sizes, with 15" or 25" throat,

respectively.

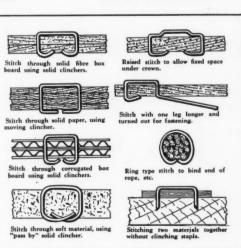


Regular Slotted Container, showing bottom stitched on Bottom Stitcher



TYPES OF WIRE STITCHING

These are some of the types of wire stitching that come within the range of the Bliss Heavy Duty Stitcher Head. Correspondence is solicited regarding any other types of stitches your work may require.



TOP STITCHERS

Bliss Power Lift Top Stitcher

Recommended where large numbers of heavy containers are used and is especially suitable for conveyor installations, as it is adjustable to coincide with conveyor line.

Equipped with a power driven work table. Table automatically stops in just right position for top stitching. One motor operates power lift and stitcher. A steel work table equipped with steel ball bearings permits free movement of container while being stitched.

Equipped with Bliss Heavy Duty Stitcher Head.

Built in one size, with 33" throat length. Table size $26'' \times 40''$.



Bliss Power Lift Top Stitcher

Bliss Quick Lift Top Stitcher

Used for wire stitching the tops of regular slotted containers and Bliss Boxes.

The steel table is supported by the Bliss quick lift mechanism which is positive in action and instantly adjustable up and down. Raising and lowering of table is facilitated by the use of counterbalancing steel springs.

Equipped with Bliss Heavy Duty Stitcher Head.

Built in three throat lengths—15", 25" and 33", accommodating boxes up to 33" long, 33" wide and 28" deep.









Bliss Quick Lift Top Stitcher

LATHAM CORNER STAY STITCHER



The Latham Corner Stay Stitcher places a right angle stitch around corner of box.

The machine is used for hardware packing boxes, cracker caddy covers and boxes for other purposes; also for strengthening the higher grade set-up boxes which are later covered with paper. Motor, ½ HP, any desired electrical specifications.

Distance from stitch to inside of frame is 12". Wire used is .017 to .020 ribbon, or No. 20 \times No. 25 flat.

BOSTON PORTABLE BENCH STITCHER

With this new Boston Portable Bench Stitcher, you will often find it more convenient to take the machine to the work to be stitched rather than carry the work to the stitcher. The machine is intended for light stitching operations, such as sealing filled bags by wire stitching, attaching articles to cards, and making small boxes.

small boxes.

The Portable is readily carried from one location to another, attached to light socket and put into operation without delay. It is electrically tripped



Boston Portable Bench Stitcher

It is electrically tripped by means of solenoid operated by a foot pedal. Stitches work up to $^1/_4$ " in thickness and has throat length of 4". Uses No. 26-D Stitcher head for 25 to 30 round wire. Crown $^3/_5$ " or $^1/_2$ " as ordered. Motor $^1/_{20}$ HP, 110V, AC, 60 cycle.

DEXTER FOLDER COMPANY 330 West 42nd Street, New York, N. Y.

REGULAR SLOTTED CONTAINER STITCHERS

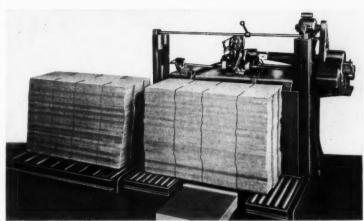
BLISS AUTOMATIC RSC STITCHER WITH DEXTER ELEVATOR

This new low cost Bliss Regular Slotted Container Stitcher, equipped with Dexter Automatic Elevator, produces at the rate of 1,500 to 2,000 average size slotted containers per hour with one operator. A pile of blanks up to $3^{1}/_{2}$ feet in height is rolled from your conveyor system onto the elevator. As the operator folds and feeds the blanks, the elevator automatically keeps the top of the pile at feeding level, thus aiding the operator in accurate high speed feeding until the entire pile is fed. The feed table is quickly lowered for the next load. Better quality and uniformity of folding is obtained, as well as higher production due to uninterrupted feeding.

The operator folds the blank and pushes it through the open head against a stop. This action trips the solenoid which oper-

ates the clutch, and the blank is automatically fed through and stitched, with stitches evenly spaced in accordance with predetermined setting. Side guides adjustable to the size of the box blank serve as guides, thus assuring a squarely stitched container.

Provision is made for even spacing of stitches within a range of $1^1/2''$ to 3'' between stitches. Tie stitches may be driven at each end of the row of stitches, if desired. Only the number of stitches for which the machine is set will be driven.



Bliss Automatic RSC Stitcher with Dexter Elevator

Complete set-up for size of container and thickness of board requires approximately five minutes. This quick adjustment feature makes the Bliss Automatic practical and economical for both short and long runs. Operates at a speed of 325 stitches per minute. Stitches a wide range of sizes, representing approximately 90% of the boxes produced. Equipped with Bliss Heavy Duty Stitcher Head with 45° Stitch. Single V-belt drive. Motor equipment, ³/₄ H.P. for stitcher and ¹/₄ H.P. motor for Dexter Elevator, any electrical specifications required.

BLISS DIAGONAL HEAD RSC STITCHER

The Bliss Diagonal Head Hand Fed Regular Slotted Container Stitcher, which drives the stitch at an angle of 45° to the manufacturer's seam, is a particularly desirable machine for stitching corrugated or solid fibre containers. The stitch when placed diagonally across the corrugations makes the strongest seam available. Solid fibre containers are also stronger when diagonally stitched, as the stitch is always across the grain of the board, thus enhancing its holding strength.

It is not uncommon to find this machine operating at speeds of 400 to 500 stitches per minute. As many as 10,000 containers with five stitches are frequently produced in a day's run.

The machine is equipped with the Bliss Heavy Duty Stitcher Head and a steel work table with quickly adjustable guides. The Bliss Open Head device for holding the flaps in position, is rigidly attached to the stitcher head casting and is therefore self-supporting. The clincher anvil does not rest on the box blank at the moment of stitching, which feature eliminates the crushing of the corrugations or denting the board.

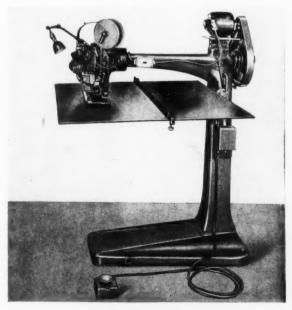
The machine can be furnished with special swivel clinching



anvil, for stitching double wall A and B and A and A corrugated boxes. A long draw stitcher head is used.

SPECIFICATIONS. Built in 32", 38" and 48" throat lengths. Height to clincher, 43".

Motor, 1/3 HP any electrical specification required.



Bliss RSC Stitcher (Diagonal Head)

TYPES OF BLISS BOXES



of Bliss Boxes are the No. 2, No. 4 and No. 4-2 models.



No. 2 Bliss Box-

When No. 2 Box is assembled, the flanges form a double thickness of board on all vertical seams on the sides, and on horizontal seams at each end of the box.

When No. 4 box is assembled the three flanges form a double thickness on the ends, which gives added protection for canned goods and other commodities where an end thrust of the contents is to be guarded against.



No. 2 Bliss Box-Sealed

This New Bliss Wire-LockSeal Box may be sealed, opened for inspection and re-sealed without damage to the box.

the box.
Wire stitches with arched crown
attached to top panel and body of
box provide means for locking the
cover with wire or strips of metal cover with wire or strips of metal which may be sealed with lead seals. Such seals are readily broken without damage to the box and after inspection or repacking new seals may be applied. This box, with arched wire seals attached, is manufactured by leading container com-



ADVANTAGES OF BLISS BOXES

Packing goods in BLISS BOXES assures the manufacturer of the greatest possible margin of safety to his goods while stored and The three-piece construction, with all vertical seams reinforced, makes the BLISS BOX the strongest corrugated or solid fibre container obtainable.

The special method of construction of the Bliss Box offers greatly increased resistance to all types of stresses, whether from within or

Bliss Boxes are economical because they contain no waste stock. The saving in material and freight charges reduces the total cost an average of 10% and in some instances as much as 20% when compared with other types of fibre containers. The extra strength of the BLISS BOX also often permits the use of lighter board which effects an additional saving.

Blanks for BLISS BOXES are manufactured by nearly all leading board mills and box factories in the United States and Canada and are therefore as readily obtainable as other types of shipping containers. A complete list of manufacturers will be furnished on request.

DEXTER ENGINEERING SERVICE

The Dexter Folder Company is a sixty year old concern, with sales and service offices in New York, Chicago, Philadelphia, Boston, Cincinnati, and Dallas.

Their wide experience, up-to-date engineering facilities and modern methods of manufacture, have combined to produce a line of wire stitching equipment for every purpose that is unsurpassed in quality and productive capacity.

Dexter men who have a thorough knowledge of requirements for packaging and shipping many kinds of products, and the numerous applications of wire stitching in manufacturing methods, are available, without obligation, for consultation at your convenience.

Write us.

DEXTER FOLDER COMPANY

330 WEST 42nd STREET

NEW YORK, N. Y.

Capping and sealing equipment

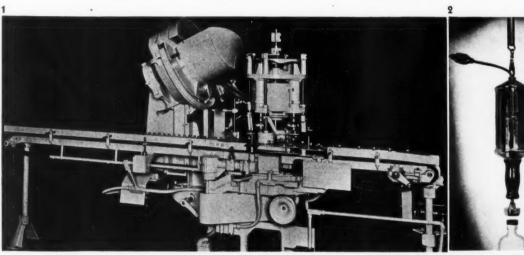
ACHINES are available for applying screw caps, crowns, corks and vacuum caps to containers at varying rates of speeds and under a wide range of differing operating conditions. Such machinery varies from the simplest hand cappers to high-speed fully automatic equipment, operating on conveyor lines in conjunction with filling and labeling and cartoning machines.

Screw and turn-on caps

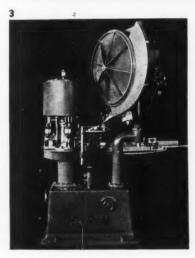
The application of the screw cap closure is not as difficult a problem as it at first appears. When the cap is properly designed so that the lead threads readily follow the thread on the glass, thus preventing any tendency to cross thread, and the liners are glued into the cap or attached in a satisfactory manner so as to prevent their falling out of the cap, it is possible to employ automatic equipment in applying these closures.

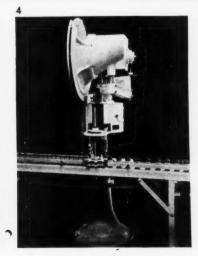
There are several types of machines available for applying turn-on caps. On some of these it is only necessary to dump the caps in a hopper, from where they are systematically sorted and fed to the machine in relative cooperation with containers received from the filler. On others, generally referred to as semi-auto-

1. Four-head fully automatic, rotary capper. Courtesy Pneumatic Scale Corp., Ltd. 2. Semi-automatic hand-operated screw capping machine. Courtesy Scientific Filter Co. 3. Full automatic four-spindle rotary capper. 4. Full automatic capper designed for sorting, feeding and applying square cover assembly to can bodies. 5. Automatic two-spindle rotary type capper for intermediate output. Photos 3, 4, 5 Consolidated Packaging Machinery Corp.









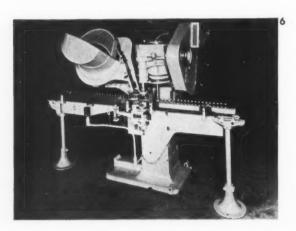


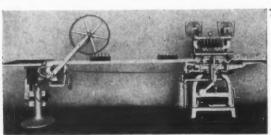
PACKAGING CATALOG

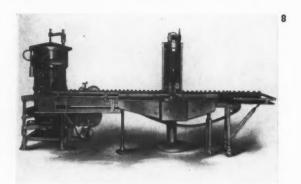
matic cappers, it is necessary to start the cap on the container. Regardless of the type machine employed, the caps must be applied with the proper tension so that a perfect seal is made both with the top of the bottle and the cap liner.

Hand-capping machines are, in many cases, used where production requirements are so small that the tendency is to continue with the old hand operation. For those manufacturers whose requirements are small, the adoption of at least a hand-tightening unit is recommended. This unit can be adjusted so that every cap

6. Single-head full automatic capper. 7. Corking wheel unit on discharge conveyor of filling machine. Photos courtesy Pneumatic Scale Corp., Ltd. 8. Semi-automatic screw capper in hook-up with hand feed, automatic discharge rotary bottle filler. Photo Horix Manufacturing Co.







will be applied to the proper tension in order to insure a proper seal and still be easily removable by hand.

Semi-automatic machines are of the same general construction and size as the fully automatic. The cap-feeding device, however, is omitted and the cap started on the container by hand. It is installed in the production line the same as the fully automatic and occupies the same space as the automatic machine. It has a feed conveyor and a discharge conveyor and the containers are fed and discharged automatically.

The smallest semi-automatic machine is generally a single-head machine designed for operating at capacities from 1800 per hour to about 2700 per hour. In order to obtain a larger capacity, it is necessary to employ a machine using a number of spindles rather than a single head. These units are designed to possess a capacity of from approximately 50 containers per minute to 120 or more. They are usually of the rotary type and are in practically all cases the same machine as the fully automatic, except for the omission of the automatic cap-feeding and applying mechanism.

Another variation of the semi-automatic capper is the type which uses a belt cap feed on to which the operator simply feeds the caps. From that point on, operation is completely automatic. This method is often used where closures are not suited to automatic sorting and feeding.

The semi-automatic unit can be readily changed from one size container and cap to another and the cost of attachments for the different containers is not exceedingly high. On the fully automatic machine, a change from one size cap and container to another requires a longer period of time and the attachments, of course, are much more costly.

Fully automatic machines, when it comes to larger capacities, or outputs, are sometimes found to be far more desirable inasmuch as their greater efficiency will considerably reduce packaging production costs.

Automatic units are most profitably adapted to those production lines operating at a capacity of 45 or more containers per minute. There are, however, many instances where a steady production of 35 to 40 containers per minute is needed and sizes are suited to automatic production. In such cases, a full automatic single head or slow speed multiple head unit may be desirable.

A recent development replaces the familiar hopper with a worm feed device. Since this eliminates the necessity of agitating and jumbling large masses of caps in a hopper, it permits the handling of delicate types which could not previously be handled automatically and particularly those closure types where the height exceeds the diameter.

Crowns and corks

When plain or flanged corks are used, the capping problem resolves itself into one of inserting the cork



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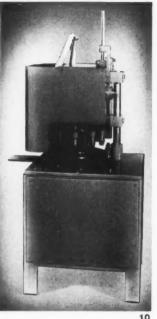
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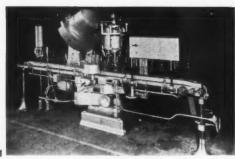
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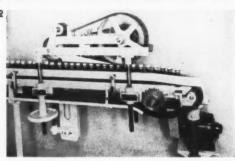
STANDARD-KNAPP CORPORATION

Windsor House, Victoria Street, LONDON ENGLAND









9. Full automatic rotary corker for flanged corks. Courtesy U. S. Bottlers Machinery Co. 10. Machine for automatically cutting and inserting cotton wads into pill bottles. Courtesy Consolidated Packaging Machinery Co. 11. Combined capper and corker for applying screw-on caps and depressing corks. 12. Cork depressing device operating on conveyor line. Photos Pneumatic Scale Corp., Ltd.

into the neck, rather than turning a thread. Such insertion is, in the vast majority of cases, done in part or in whole by hand. The most familiar mechanical aid is the corking wheel conveyor, which consists of a section of belt conveyor with a wheel of fairly large diameter suspended above it at the height of the bottle top. Operators start the corks as the containers pass down the forepart of the conveyor and the movement of the belt then forces the bottles, one by one, under the corking wheel. Thus a gradual and increasing pressure is applied to each cork in turn, forcing it into position.

Another type of corker substitutes an endless belt, running over two pulleys, for the corking wheel. A rigid metal plate behind the slanting lower portion of the moving belt forces the corks firmly and evenly into the neck of the containers.

Crown caps are frequently applied by equipment forming an integral part of bottle filling machines. However, separate rotary crowners of fully automatic type are available. These are very similar, in feed and general structure, to rotary turn-on closure cappers, except that they substitute a crown forming pressure for the turning action of the ordinary capper.

Hand and semi-automatic devices for applying crown caps, milk bottle caps, foil and paper hoods for milk bottles and many other specialized types of closure or super closure are also available. The basic principle of application varies very little, however, from those described in the foregoing discussion.

So-called roll-on caps are applied by rotary automatic machines which position the unthreaded cap on the bottle and hold it thus while revolving rollers form the cap metal to the shape of the bottle thread.

Fully automatic corking units have been devised recently for a number of special applications. In one such machine, corks are placed into correct position in the corking head for driving into the bottle neck by a positive air pressure feeding device. Corks are hopper fed into a channel that directs each cork to the correct position and register before insertion in the bottle neck. The large capacity hopper is so designed that a casual glance from the line operator will determine just when a new batch of corks is required.

Feeding of the filled but uncorked bottles into the machine is controlled by an electric feed switch. The machine is so designed as to automatically stop whenever a "break" appears in the line of advancing bottles and to remain stopped until the break is closed. The machine is equipped with a vari-drive, making possible its operation at exactly the speed called for by the production schedule and its synchronization with the other units of a packaging line.

HORIX MANUFACTURING CO.

PITTSBURGH (4), PA.

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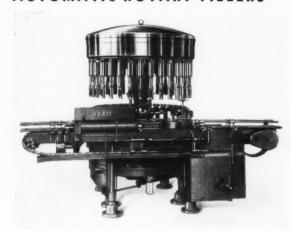
Chili Sauce Tomato Pulp Ice Cream Cottage Cheese Sour Cream

MODEL NV STRAIGHT-LINE FILLER

Ideal for filling small lots of different products into a variety of containers. Handles any shape or size of bottle from 4 oz. to 1 gal. Change from one size container to another is quickly and easily made. Empty bottles are fed by hand. Fills 4 to 12 bottles at a time, depending on their size. Whiskey can be filled at rate of 45 a minute. Filled bottles can be discharged onto a moving conveyor. Does not require expert mechanics for satisfactory operation. Exclusive Gravity-Vacuum System prevents loss due to defective bottles. All parts accessible for cleaning. Corrosion-resisting contact parts can be supplied.

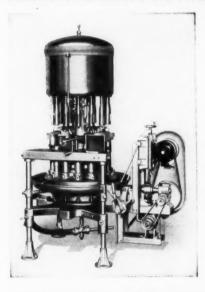


AUTOMATIC ROTARY FILLERS



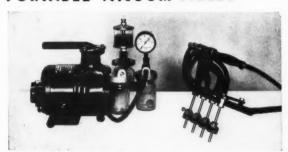
Suitable for plants requiring maximum continuous speed with minimum labor. Feed, filling and discharge are completely automatic. Automatic safeties prevent damage and lost time due to defective containers. Bottle Fillers available in 7, 9, 14, 18, 21, 24, 28, and 32-valve sizes, will fill all types of containers, up to 400 a minute. Can Fillers are built with 6, 10, 12 or 18 valves to suit special requirements, filling soups, fruit juices, etc., and syruping or saucing beans, spaghetti, etc., at speeds up to 250 a minute. Operate with all standard washers or closing machines. Quickly adjusted to different sizes of containers. Fill uniformly, without drip or waste. Easily dis-assembled for cleaning or adjusting. Sturdily constructed to insure dependability and long life. Safety devices automatically stop the machine in case of jams at infeed or discharge, and prevent damage to filling machine and costly production delays due to choke-neck bottles.

SEMI-AUTOMATIC ROTARY FILLERS



Empty bottles are fed by hand: filling and discharge are automatic. Can be built to handle all sizes and shapes of bottles from 2 oz. to 1 gal. at speeds up to 60 a minute. Quickly adjusted to different size bottles. Fills uniformly, without drip or waste. Easily disassembled for cleaning or adjusting. Sturdily constructed to insure dependability and long life. Can be operated by unskilled labor.

PORTABLE VACUUM FILLER



A simple, easily-operated machine of wide adaptability. Consists of compact motor-pump unit, with built-in switch; light-weight filling head, with quickly adjustable valves; over-flow jar; necessary hose connections. Motor can be attached to any light socket. Filling head balanced to minimize fatigue. Corrosion-resisting contact parts, easily cleaned, furnished to suit requirements.

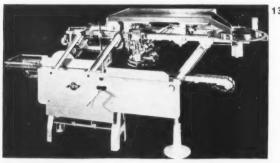
CONVEYORS AND WORK TABLES

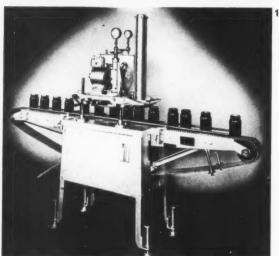
Chain Conveyors, which speed up production and save labor, can be furnished, with Semi-Automatic Corkers, to meet all requirements. Work Table Conveyors, for capping, corking, labelling and inspecting, can be supplied to order. (See cut below.) Frame of heavy angle iron, rigidly braced. Legs adjustable.

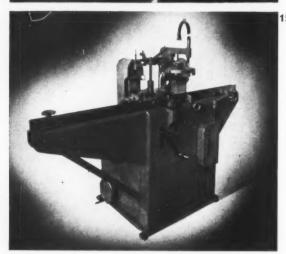


Vacuum sealing

In general, the result of the use of vacuum is that the action of oxygen as a destructive agent is retarded to a point where, for all practical purposes, it is non-existent. These advantages may be summed up as follows:







13. Adjustable vacuum-pry-off cap sealing machine for jars from 3 to 12 in. high and 1 to 8 in. in diameter. Photo Crown Cork and Seal Co. 14. Automatic, straightline high-speed model, steam vacuum capping machine. Photo Anchor-Hocking Glass Corp. 15. Automatic cottoner for inserting wadding into pill-bottles. Photo The Lakso Co.

- The prevention of rancidity of oils and fats contained in food products. Even though this deterioration may take effect slowly, it is difficult to foresee how long a package may remain on a dealer's shelf and even slight rancidity is enough to adversely affect flavor.
- The elimination of discoloration due to oxidation.
 No product that is "off color" is either appetizing or saleable.
- The preservation of delicate flavors and aromas.
 This is particularly true where a mechanical vacuum is used.
- The retarding and practical elimination of the growth of mold and yeast. The rapid multiplication of these micro-organisms is dependent on the presence of air.
- 5. The effective reduction of the corrosive action of acids and other chemical properties of food products. Corrosion is a process of oxidation and hence is effectively stopped by the decrease of oxygen content of the package through the use of a vacuum.

In general, there are two types of sealing machines for the application of metal caps under vacuum-mechanical and steam. In the mechanical type, there are two styles. One effects a vacuum seal by means of a vacuum pump and the other creates a vacuum by means of a piston arrangement built in the machine itself.

Mechanical vacuum types of sealing machines are available in a variety of styles, ranging from the simple, hand-fed types to the completely automatic styles. These machines are designed to apply caps, under vacuum, to jars, tumblers and bottles.

The development of vacuum by the displacement of air with steam provides a unique and highly important characteristic in that the vacuum is formed after the closure has been applied, thus preventing the sucking out of a cold packed product from the container or the boiling over of a hot packed product. Mechanically, the steam vacuum system is simple. No vacuum pumps are used. All that is required to successfully operate the system and the capping machine are a steam supply and electrical current.

While the primary purpose of the steam is to displace the air from the head space, it also serves a secondary function in that it sterilizes the cap and creates a sterile atmosphere for the capping operation. In general, the speed of the machine may be adjusted to the convenience of the packer and the machine can be set into packing conveyor lines. Most varieties are readily adjustable for differing sizes and styles of jars or tumblers and for varying sizes of closure. Regulation of the degree of vacuum—with the steam types—can be governed by the amount and temperature of the steam atmosphere. With the mechanical types, such regulation is effected by adjustments of the pump controls.

IN SHEETING EQUIPMENT

1

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LOWER COSTS CAN BELONG TO YOU-

1942 holds much uncertainty for us. Hurdles and barriers never known before, will be placed in our paths. The Defense Program will create more drastic restrictions—further curtailments in both labor and materials. This is already noticeable in the fact that in many instances mills can furnish paper in rolls more quickly than in sheets: This will be reflected in all other kinds of materials, packaging papers, etc. For those then, who in the days to come, find sheeting one of the hurdles, and for those who must do this work with utmost accuracy, economy and speed, we offer our newest, more rugged and sturdier machine, with solid sideframes and heavier centre braces, improved in design and construction to overcome vibration when running at high speeds, and to afford even LOWER SHEETING COSTS

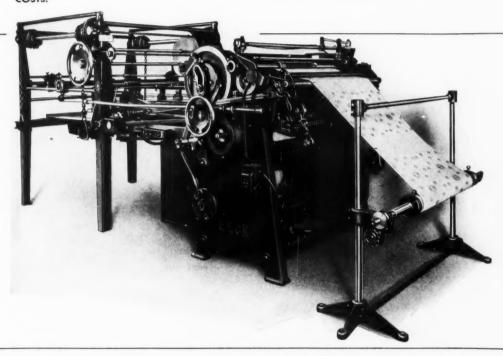


Illustration shows latest model equipped with AMPLIDYNE ELECTRIC EYE controlled compensator, for "spot sheeting," and also furnished with Sheet Piler having automatic lowering table, the complete unit of which has been the recent choice of some of the country's largest concerns, whose standards for accuracy and high production are highest.

These fully ball and roller bearing LIFETIME sheet cutters are blazing the trail for all those who seek the most economical solution to their most difficult sheet cutting problems. You will be amazed at the fidelity of performance, the surprisingly close tolerances, of these SUPER SHEETERS. Tell us what your particular hurdle in sheeting may be at the moment. We will take over your "headache" and work out the antidote.

Watermarked and safety-check papers, cellophane and other transparent cellulose materials, paper backed and other foils, printed or plain, textile materials, and an almost endless variety of commodities handled without difficulty.

"RAZOR BLADE," ALSO SHEAR PRINCIPLE & DISC CUTTER SLITTERS & REWINDERS

Send for illustrated information at once

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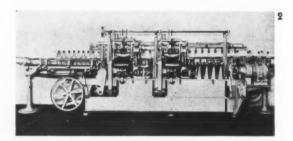
Labeling machines and devices

ROADLY speaking, there are four different methods which underlie the principles used in the design of modern labeling machines.

(1) Adhesive is applied to "pickers" which in turn carry the label from the bottom of a hopper to the package. The label is clamped to the package by grip fingers; the pickers detach themselves from the label and then pressure is applied either by flexible wipers or by press wipers so that the adhesive which remains on the label from the pickers causes the label to be attached to the wall of the package.

(2) Adhesive is applied to a rubber pad. This pad is brought in contact with the package and then the label in turn is brought in contact with the adhesive-covered surface of the package, after which pressure is applied by wipers to form the union.

(3) The label is fed by pneumatic means from a hopper, passed over an opening where a spraying apparatus



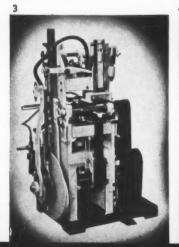
applies the adhesive. By the same pneumatic means, the label is then carried to the package and applied. Pressure is exerted to complete the attaching.

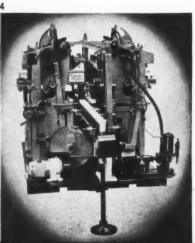
(4) The label is fed from a hopper by means of a pneumatic platen, which rigidly holds the label over its entire surface in a flat condition and carried tangentially over a twin roller gumming mechanism where a uniform film of adhesive is rolled on to the label. By the same pneumatic means, it is carried and attached to the article, after which pressure is applied to insure firm adhesion.

As is natural with almost all mechanization, the modern labeler is offered in both semi-automatic and fully automatic models, the difference being broadly as to whether the package is brought to the applying station manually or mechanically.

Methods 1 and 4, mentioned before, are employed for semi-automatic or hand-fed machines, whereas all four methods are used in the automatic labelers.

Semi-automatic or hand-fed labelers on the market today are capable of offering the user capacities from 30 to 60 labels per minute. The production, however, must of necessity depend on the article itself, on the dexterity and application of the operator and the plant management in bringing the articles to, and carrying them away from, the machine. In the majority of cases, this is done by conveyors running in front of (but not interfering with) the operator, or alongside of the attendant. Inspection and packing should be done immediately after the operator removes the labeled article from the machine and, in the choice of the labeler, this feature should be strongly considered so as to eliminate unnecessary and costly handling charges. Some labeling machines have an extremely wide range of adjustability, being capable of handling and affixing labels from the size of postage stamps up to labels or panels 61/2 in. sq.





1. Ten-wide straight-line multiple automatic labeler. Labels ten bottles simultaneously. Courtesy Edward Ermold Co. 2. Automatic straight-line twinstation labeller, applying front, front and back, body and neck labels to bottles. Courtesy Economic Machinery Co. 3. Hand-fed semi-automatic labeler. Foot pedal controlled. Courtesy New Jersey Machine Corp. 4. Fully automatic duplex labeler for applying front and back labels simultaneously. Courtesy New Jersey Machine Corp.

LABELING DIFFICULTIES

Their Causes and Correction

Before changing the adjustment of any labeling machine mechanism, be sure the original position is marked so that, if necessary, the unit may be easily returned to its proper place. While it is not represented, that the treatment of each subject in this section is complete, an effort has been made to cover all the more common conditions that arise in the various industries labeling glass containers.

LABELS CURLING AWAY FROM BOTTLES CAUSES RECOMMENDATIONS 1. Application of too much glue. 2. Inefficient wiper action. 3. Use of stiff, springy labels vertically grained. 3. (a) "Roll" or flex the labels before running them, by bending labels sure, however, that they lie flat in the label hopper of the machine.) (b) Humidity or stipple the labels before gluing. (c) If hand labeling, prolong the tempering time until the stock is limp. (d) Specify labels with a horizontal grain direction for machine application. 4. Use of glue with insufficient tack. 4. (a) Apply the glue concentrated, adding only the amount of water prescribed for proper machining. (b) Inquire of glue supplier for a suitable grade of a tackier glue. 5. Labeling wet bottles. 5. (a) Humidity or stipple the labels. (b) Change to a jelly-type labeling gum. (c) Install an air blower on the conveyor line to the labeling machine. WRINKLING OR BLISTERING OF LABELS CAUSES RECOMMENDATIONS 1. Use of a glass package having a two directional curve of the labeling surface. (b) Humidity or stipple labels applied automatically or prolong the tempering ime of labels applied by hand.

-			 (b) Change to a jelly-type labeling gum. (c) Install an air blower on the conveyor line to the labeling machine.
	WRINKLING OR BLI	STE	RING OF LABELS
	CAUSES		RECOMMENDATIONS
1.	Use of a glass package having a two directional curve of the labeling surface.	1.	 (a) Design labels to conform as snugly as possible with the contour of the labeling surface. (b) Humidity or stipple labels applied automatically or prolong the tempering time of labels applied by hand. (c) Wherever possible, design the package so that the labeling surface curves in but one direction.
2.	Application of too much glue.	2.	Apply the thinnest possible even glue film by adjusting the scraper close to the glue roll.
3.	Use of vertically grained labels.	3.	(a) Humidify or stipple the labels before gluing.(b) Specify horizontal graining on future label orders.
4.	Uneven absorbency of label paper, due to spotty sizing or off- set of inks and varnish coatings.	4.	(a) Humidify the labels before gluing.(b) Use a slow drying labeling glue to provide time for uniform penetration of the stock.
5.	Too much moisture in machine labeling glue.	5.	Use a labeling adhesive with high solids (low water content), and run as concentrated as possible.
6.	Use of fast drying glue on labels of high moisture sensitivity.	6.	 (a) Use a tacky but slow drying glue to permit shrinkage of the labels as moisture evaporates. (b) If labels have been stored in a warm, dry location and have consequently dried out, they should be humidified be- fore running.
7.	Applying glue to all but a small portion of the label.	7.	Use picker plates or center gummer pads of the proper size for the labels being applied by machines operating on the stencil principle.
8.	Inefficient wiper action.	8.	Adjust wipers to apply proper and even pressure throughout the label area.

(a) Humidify the labels.(b) Change to a jelly-type labeling gum.(c) Install an air-blower on the conveyor line to the labeling

CAUSES s not prop

F.

- 1. Pickers, pads, or bottles not pro-
- Application of inadequate or expands, labels, or bottles.
- 3. Glue lacking sufficient initial tac
- 4. Prongs or hooks of label hopper
- 5. Insufficient supply of labels in th

CAUSES

- 1. Pickers not on the same plane, o
- 2. Transfer roller and glue roll not
- 3. Uneven transfer of labeling glue
- 4. Use of labels having uneven absorber
- 5. Water not thoroughly incorporate

CAUSES

- Glue accumulating and setting on prongs, wipers, etc.
- One or both picker fingers or plategies film.
- 3. Faulty adjustment of label hopper
- 4. Wipers engaging labels.

CAUSES

- Application of too much glue.
- Use of the wrong type of glue for labeling surface.
- 3. Use of hard-sized, resistant paper
- Remoistening of label glue on bott tion.
- Glue partially dry on labels before (Most often experienced in delaytions.)
- 6. Inadequate glue application (rare)

10. Glue on grip-finger of the machine.

10. Wash grip-finger thoroughly and dry.

* From "Successful Bottle", Lebeling" published by National Adhesives Division of National Starch Products, Inc.

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9 Rottles wet when labeled.

FAILURE TO PICK LABELS OUT OF HOPPER

CAUSES

- 1. Pickers, pads, or bottles not properly contacting labels.
- Application of inadequate or excessive glue to the pickers, pads, labels, or bottles.
- Glue lacking sufficient initial tack to pick labels out of hopper.
- Prongs or hooks of label hopper gripping labels too tightly.
- 5. Insufficient supply of labels in the label hopper.

RECOMMENDATIONS

- (a) Check that label follower is riding freely and the follower plate is covering the entire label area. (b) Adjust pickers to the same plane or level.
- 2. Adjust scraper to apply a thin, even glue film.
- (a) Run glue concentrated, applying a minimum even film.(b) Consult adhesive supplier for tackier label glue.
- (a) Wash dried glue from prongs and hooks.(b) If prong hooks are rough, slant and smooth with fine emery
 - (c) Check adjustment of prongs so that the stack rides freely.
- 5. Maintain a cushion of labels in the hopper to insure a proper spring tension on the follower plate.

SPOTTY ADHESION

CAUSES

- 1. Pickers not on the same plane, or bent.
- 2. Transfer roller and glue roll not in proper contact.
- 3. Uneven transfer of labeling glue.
- 4. Use of labels having uneven absorption qualities.
- 5. Water not thoroughly incorporated into the glue.

RECOMMENDATIONS

- Level the pickers to the same plane, and work out any surface irregularities.
- Adjust the glue roll or transfer roller to provide a flush meet-
- (a) If the glue is too viscous to transfer evenly, dilute with a
 - (b) Adjust the scraper to provide a uniform clearance of the
- (a) Use a suction-type labeling gum, or a fast-tacking, slow-drying glue.
 (b) Humidify the labels.
 (c) Switch to a uniformly absorbent label stock.
- (a) Water should be added slowly and mixed into glue thoroughly before placing in the glue pot.

 (b) When diluting glue already in the pot of the machine, use a thin glue mixture and stir in well.

TEARING OF LABELS IN THE MACHINE

CAUSES

- Glue accumulating and setting on the transfer rollers, pickers, prongs, wipers, etc
- One or both picker fingers or plates receiving an inadequate
- 3. Faulty adjustment of label hopper unit.
- 4. Wipers engaging labels.

RECOMMENDATIONS

- (a) Wash all gluing parts with warm water.(b) Dilute the glue as prescribed by the supplier.(c) Keep the machine in steady operation, or clean all gluing parts if labeling is interrupted.
- (a) Adjust pickers to the same plane or level, so that both will receive identical glue films.
 - (b) Adjust scraper to feed a slightly heavier film.
- (a) Adjust prongs so that label stack rides freely.
 (b) See that there is sufficient spring tension on the label follower, and that follower plate presses labels evenly but not tro tightly against prong hooks.
 (c) Slant and smooth label prong hooks with fine emery cloth.
- Clean the wipers with warm water to remove accumulated and hardened glue.

LABELS FALLING OFF BOTTLES

CAUSES

- 1. Application of too much glue,
- Use of the wrong type of glue for nature or condition of the labeling surface
- 3. Use of hard-sized, resistant paper stock.
- Remoistening of label glue on bottles stored in a damp location.
- Glue partially dry on labels before they are applied to bottles. (Most often experienced in delayed table gumming opera-
- 6. Inadequate glue application (rare).

RECOMMENDATIONS

- (a) Dilute the glue as instructed and tighten the scraper close to glue roll.

 (b) Test a label glue that dries to a plastic film.
- 2. If labeling greasy containers, or stippled bottles, consult your adjesive supplier for a suitable glue
- (a) Use a tacky, slow-drying label glue, or a gum that adheres by suction instead of penetration.(b) Change to a softer, more absorbent stock.
- 4. Use a non-hygroscopic (moisture-resistant) labeling adhesive.
- (a) Apply labels to bottles promptly after gluing.(b) Use slower-drying labeling adhesive.
- (a) See that film control unit is properly adjusted.(b) Refill glue pot with properly diluted glue. (Incorporate prescribed amount of water thoroughly.)

DISCOLORATION OR STAINING OF LABELS

CAUSES

- 1. Use of label stocks colored with water-sensitive or alkali-sensitive dyes.
- 2. Use of thin, translucent labels.
- 3. Use of highly absorbent labels.
- 4. Oil or grease falling on bottles in filling or capping machines.
- Use of glue contaminated by foreign matter.
- 6. Use of a hygroscopic (moisture-absorbent) adhesive.
- 7. Application of too much glue.

RECOMMENDATIONS

- (a) If plain water causes discoloration, consult the label supplier, as all commonly used labeling glues are of an aqueous nature
 - (b) If the color does not change with plain water but does with the type of glue you are using, test a chemically neutral grade.
- 2. (a) Test a light colored or transparent labeling adhesive.(b) Change to a heavier, more opaque label stock.
- (a) Test a cohesive labeling gum that relies for adhesion on
- suction rather than penetration.
 (b) Change to a moderately hard sized and calendered stock.
- Clean fillers and cappers, and make necessary repairs or adjustments to prevent a recurrence.
- See "Molding of Labeled Bottles."
- Switch to a non-hygroscopic (moisture-resistant) adhesive.
- (a) Clean wipers, brushes, and pressure pads.
 (b) Tighten the scraper close to the glue roll.

SMEARING OF BOTTLES OR LABELS

CAUSES

- 1. Application of too much glue.
- Excessive pressure of flap type wipers. 2
- 3. Use of a glue that dries to a cloudy film.
- 4. Slipping of labels.
- 5. Use of freshly printed labels.
- 6. Poor quality ink used in printing labels.

RECOMMENDATIONS

- 1. Tighten the scraper close to the glue roll.
- 2. Lighten the pressure slightly, making sure that enough is exerted to prevent labels from curling away after application.
- Test adhesives that dry to a clear film.
- 4. See "Crooked Labeling."
- 5. Age labels until inks are perfectly dry.
- 6. If ink smears on labels with normal handling, consult label

SCUFFING OF LABELS WHEN NESTING

CAUSES

- 1. Application of too much glue.
- 2. Use of a slow-setting glue.
- 3. Freshly labeled bottles being scraped while nesting.
- 4. Faulty wiper action.
- 5. Wrinkling or blistering of labels.

RECOMMENDATIONS

- Dilute the glue to the extent prescribed by the manufacturer, and apply the thinnest even film you can regulate by close scraper adjustment.
- Usually the setting speed of the glue can be increased by running at a higher concentration and applying sparingly, but if this fails, consult your adhesive supplier regarding faster-setting grades.

- setting grades.

 (a) Check that the dimensions of the bottle nest are correct for the size of the bottle.

 (b) If nesting by hand, slide bottles into compartments so that labeled area does not contact partitions or lower the case so the bottles can be dropped straight into the nest.

 (c) If nesting by machine, use proper grid, funnel, and guiding fingers for size of container being packed. Clean and adjust guiding fingers of boxing unit to prevent their engaging labels. Replace broken guiding fingers.
- Adjust wipers to apply proper pressure slightly beyond all edges of the labels.
- 5. See "Wrinkling or Blistering of Labels."

CROOKED LABELING

CAUSES

- 1. Uneven application of glue to labels.
- 2. Excessive glue application.
- 3. Grip-finger not holding labels firmly.
- 4. Uneven pressure of flap type wipers.
- Rough or gummed up prongs on label holder.
- Improper registration of labels.
- 7. Use of glue with inadequate tack.

RECOMMENDATIONS

- (a) True the scraper or twin rolls to regulate a uniform glue film.
 - film.

 (b) Check that pickers are on the same plane and smooth out any hollow spots on the face of pickers.

 (c) Check that transfer roller meets glue roll flush.

 (See machinery instruction book for adjustments.)

 (d) Use pickers of proper size for labels being run.

 Tighten the scraper close to the glue roll.
- Adjust grip-finger lever to exert just enough pressure to prevent wipers from shifting position of labels on the bottles.
- Check wiper action to be sure of equalization of pressure at both ends of label.
- Clean label holder prongs with a damp cloth and smooth gripper hooks with fine emery cloth.
- (a) Align label holder to bring it in proper position and, if more than one, in proper relation to each other.(b) Square off bottle-rest mechanism.
- 7.
 - (a) Run the glue as concentrated as possible.(b) Test glues with higher initial tack.

MOLDING OF LABELED BOTTLES

CAUSES

- 1. Spillage of bottle contents at filling machine.
- 2. Contamination of the labeling glue.
- 3. Storage of labeled bottles in a damp location.
- 4. Inefficient cleaning action of bottle soaker.

RECOMMENDATIONS

- (a) Repair filling machine to ensure its proper functioning.(b) Investigate causes of forced stops at filler.
- (a) Clean all metal gluing parts of the machine (glue pot, roll, scraper, pickers, etc.), as well as mixing paddles, scoops, glue pails, etc., with boiling water and antiseptic. Rubber rollers and wipers should be washed with luke-warm water.

 (b) Use only clean water for diluting the glue.

 - (c) Keep glue barrel covered when not in use.(d) Consult glue supplier if trouble persists.
- 3. Store labeled bottles in a clean, dry location.
- Clean the soaker with the frequency prescribed by the manufacturer of the unit.

LOSS OF LABELS IN WATER COOLERS

CAUSES

- 1. Temperature of water in the cooler too high.
- 2. Use of a water absorbent label stock.
- 3. Use of stippled or other decoratively molded bottles.
- 4. Use of a readily water-soluble adhesive.
- 5. Application of too much glue.
- 6. Inadequate glue area on labels.

RECOMMENDATIONS

- 1. (a) Add ice more frequently or adjust the refrigerating unit
 - (a) Audition more remperature.
 (b) Drain water coolers, if left unattended.
 (c) Clean the cooling unit frequently and remove labels which have soaked off bottles.
- The face of bottle labels subject to liquid refrigeration should be rendered water-resistant by sizing, solid ink backgrounds, varnish coatings, etc., (e.g., foil-laminated labels are highly water-repellent)
- 3. For best results, use a bottle providing a smooth labeling surface.
- 4. Switch to a cold-water-resistant labeling glue.
- 5. To ensure a close contact between the label and the bottle. regulate a very thin, even glue application.
- Increase glue area of labels by adjusting or substituting broader-faced pickers.

DIFFICULTY IN REMOVING LABELS

(Of interest chiefly to soft drink and beer bottlers)

CAUSES

- 1. Faulty soaker action.
- 2. Use of a warm-water-resistant glue.
- 3. Use of a highly water-repellent label.
- 4. Applying glue to an excessive label area.

RECOMMENDATIONS

- (a) Have soaker inspected and overhauled.
 (b) See that a sufficiently high water temperature and caustic concentration are maintained. (Must comply with State regulations.)
- 2. Change to a more heat sensitive type of glue.
- (a) Test other cleaning compounds.
 (b) Consider the possibility of substituting a less resistant type of label stock, bearing in mind the greater importance of retaining labels in the field than of simplifying their removal in the plant.
- Reduce glue area on labels by adjusting the pickers or by substituting pickers with a narrower gluing surface, making sure, however, to avoid extremes which would sacrifice field efficiency.

FOAMING IN THE SOAKER

CAUSES

- 1. Formation of soaps from reaction of bottle cleaning solution with

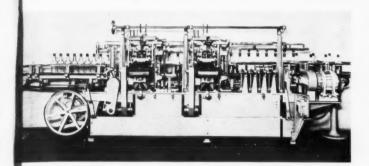
 - (a) contamination on bottles
 (b) sizing, printing, and finishing of labels.
- 2. Application of too much glue to labels.
- Mechanical reasons such as excessive pressure of circulation pump, leaks on intake side of pump, insufficient tank height to provide room for blanket of foam, etc.
- 4. Use of soft water.
- 5. Solution level in tank below intake level.

RECOMMENDATIONS

- (a) Provide an efficient pre-rinse.
 (b) Dump label backet or re-rinse.
 - Dump label basket or screens frequently.
- Change the soaker solution more often. Test other cleaning agents.
- Test lower caustic concentrations and water temperatures.
- (e) Test lower caustic concer (Not below legal minimums.) Test other types of labels.
- 2. Tighten scraper of bottle labeling machine.
- 3. Consult soaker manufacturer regarding practical correctives.
- 4. There is no direct corrective for this, as artificial means of hardening water seldom prove successful.
- 5. Fill tank to proper level and adjust caustic to compensate.

WORLD Automatic and Semi-Automatic Labelers Provide World's Finest Labeling

Whether your labeling operation calls for continuous mass production, limited or varied output of multiple container sizes and shapes; whether the job involves front labels, back labels, neck labels or foil — any or all — you will find the most efficient, economical in the WORLD, described on this page.



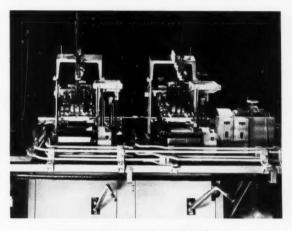
The WORLD Automatic BEE-LINE Straightaway Labeler

is for smooth, swift, precise full automatic application of front or front and back body labels — and neck labels simultaneously if desired — to round, square, flat, oval or panel bottles or flasks. It conducts each container gently, surely and steadily through the entire operation in a bee-line, without stops, detours, collisions, jars or jams. It is ideal for the new light weight glass.

The WORLD BEE-LINE Hi-Production Straightaway Labeler (pictured) is equipped with twin labeling stations to handle two bottles simultaneously, while maintaining the same efficient operating speed as the BEE-LINE Labeler that handles one bottle at a time.

For high production, precision labeling of gallon and half-gallon jugs, bottles or containers there is a specially designed and constructed WORLD BEE-LINE Straightaway Labeler, the Model HG.

WORLD BEE-LINE Straightaway Labelers may be equipped with a spotting device for accurate positioning of labels at any given location on the container.



The WORLD Automatic TURRET Labeler

furnished in Uni-Turret, Twin Turret and Triple Turret Models for high quality, low cost, full automatic labeling of round shaped (smooth, fluted or fancy), bottles including beer and beverage bottles, glass packaged foods, chemicals, drugs, cosmetics, etc.

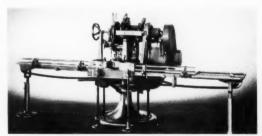
The unit construction and operation of the WORLD TURRET Labeler is especially advantageous for continuous production line service (such as continuously pasteurized beer) where preceding operations have to be shut down if labeling is not continuous. Even if one Turret unit is shut down the other unit or units continue to operate, assuring no serious stoppage of production at any time.

The Uni-Turret Labeler may be equipped with patented sliding picker mechanism for gumming entire label surface or any portion of it, as desired. This may be especially advantageous for labeling of fluted or fancy containers.



The WORLD Model CH Semi-Automatic Labeler

applies single labels from postage stamp size to 6" x 6" on containers of every size and shape from tiny vials to 4" in diameter. Compact, easy to operate, dependable, versatile, this Upright Model CH Labeler is solving a large variety of labeling problems with the utmost success and economy.



The WORLD Automatic ROTARY Labeler

is relied upon by hundreds of nationally known producers of branded merchandise for thoroughly dependable, quantity production of neatly and securely labeled round bottles and jars of all kinds and sizes. It applies body labels; body and neck labels; body, neck labels and foil — any or all in one operation.

The WORLD Model S Semi-Automatic Labeler

is World's most flexible labeler. It labels any size bottle from ampoules to gallon jugs. It applies front or back labels, or labels that go all 'round the bottle; body, neck labels and foil, separately or in one operation.

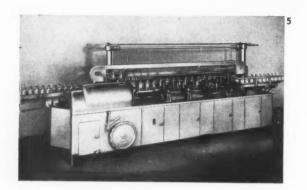


ECONOMIC MACHINERY COMPANY

Builders of World Automatic and Semi-Automatic Labelers for Every Purpose

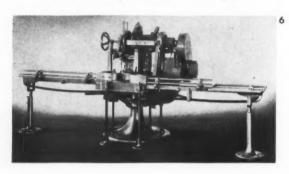
Worcester, Massachusetts

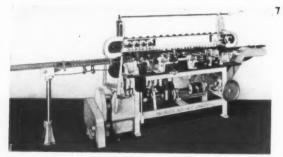
NEW YORK CLEVELAND BALTIMORE PITTSBURGH CHICAGO DENVER SAN PRANCISCO LOS ANGELS LOUISVILLE SEATTLE PORTLAND, ORE CONDON MONTREAL TORONTO WIMNIPEG



5. Duplex labeler with full automatic spotting device. Can apply front label or front and back labels simultaneously. Spotter device automatically rotates bottles and applies labels in fixed location in relation to molded design or raised letters. 6. Automatic rotary labeler for applying front and back labels, body and neck labels.

Photos courtesy Economic Machinery Co.





There are semi-automatics on the market capable of applying more than one label onto the package at one time and applying the foil onto the neck of the bottle, as used in the "soft" drink industry. They are capable of handling articles which the larger and faster fully automatic machines could not be capable of, such as delicate perfume vials, serum tubes and other highly fragile articles, also the handling of such items as cartridge fuses and battery tubes.

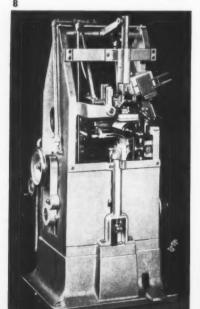
The labeling of paper boxes with paper or paper-backed foil labels or heavily embossed metallic seals, the manufacture of greeting cards, calendars, photomounts, the labeling of cigar boxes, wooden articles, attaching of paper handles to drinking cups, certain types of transparent material to folding box windows, etc., can be accomplished by some of these semi-automatic models.

Automatic labelers can be segregated into three divisions: (1) the rotary type, (2) the straight-line type and (3) the straight-line multiple type.

The rotary type of fully automatic labeler uses method No. 1 and method No. 4 for the application of the label and, as mentioned under the semi-automatic heading, it is also capable of applying two or more labels simultaneously, together with the foil neckband if desired. Consequently, it is particularly adaptable wherever round bottles, irrespective of their size, are used.

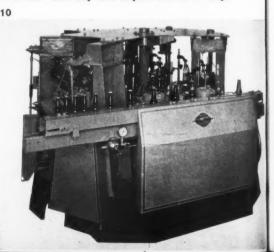
The bottles are taken from a conveyor by means of a star wheel or similar mechanism and timed through the machine. They are automatically ejected onto a conveyor and led away from the equipment to be inspected, packed or stored. They can attain speeds of 60 to 200 per minute.

The straight-line type, being of more recent design, can be used more universally as its construction allows a wider latitude in the shape of the containers and greater accuracy in the "spotting" of the label. All four methods described above are used in the feeding and attaching of the labels. Further, their design allows the adhering of front and back labels simultaneously and, by duplexing (i.e., labeling two articles at a time), higher speeds are obtained than with the rotary type. Productive capacities of 120 per minute are obtainable.



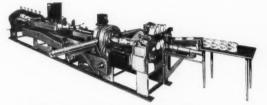
7. Duplex front and back labeler for face cream jars. Courtesy Pneumatic Scale Corp., Ltd. 8. Hand-fed semi-automatic labeler. Courtesy Economic Machinery Co. 9. Semi-automatic labeling machine, foot-pedalled controlled. Courtesy Economic Machinery Co. 10. Automatic rotary labeler for applying three labels to soft drink or beer bottles. Courtesy The Liquid Carbonic Corp.





DACKAGING LACHINES

by HUDSON-SHARP



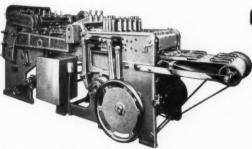
High Speed Machine For Irregular Wrapping



High Speed Machine For Rectangular Wrapping

FOR CYLINDRICAL SHAPED PRODUCTS

Wraps hard or soft cylindrical shaped products of varying sizes. Printed labels spotted accurately, wraps fully drawn and fully sealed at a rate up to 90 packages per minute on medium or large sizes. Wrap is taken from roll in continuous form. Machine completely rotary in operation.



High Speed Candy Wrapping Machine

FOR RECTANGULAR SHAPED PRODUCTS

Uses printed continuous wraps in roll form. Accurate register and perfect placement of wrap is assured at high speed. Produces up to fifty medium or large packages per minute. Design of machine adapts itself to a wide diversity of rectangular packaged products.

CANDY BAR WRAPPING MACHINE

Uses continuous printed wrapper in single double, triple or quadruple widths. Label is slit, tubed around bar, cut and end folded at a speed of 75 bars per lane or a total of 300 per minute for a four lane machine. Label is accurately spotted at maximum speed of machine. Uses any material in common use for candy wrapping and is adjustable to various sized bars. Delivers in accurate position for packing . . . completely sealed for sanitary protection and retail dispensing.

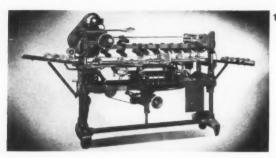
FORWARD!

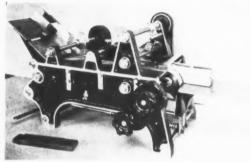
Scores of busy producers, now faced with the employment difficulties engendered by National Defense, note with satisfaction the time and labor saving advantages of their new wrapping Machines by Hudson-Sharp

HUDSON-SHARP

MACHINE CO . GREEN BAY . WIS

Builders of machines for converting papers and light boards





11. Heavy duty round can labeling machine. Photo courtesy Standard-Knapp Corp. 12. Small machine for printing code numbers and symbols on labels. Photo courtesy the Lakso Co.

Special units are built for a wide variety of requirements, such as labeling both ends of a spool of thread, applying labels to one or both ends of a cardboard shoe box or hosiery box, applying all-around labels to rectangular spice canisters, to mention a few.

The straight-line multiple type, as its name implies, labels a group of containers simultaneously. The production or capacity is determined by the size of the group of containers labeled simultaneously, multiplied by the machine speed in cycles per minute.

Available machines of the straight-line multiple type use the "picker" method for transferring and applying body, or body and neck labels to groups of 4, 6, 8 or 10 containers simultaneously for respective capacities of 80, 120, 160 or 200 per minute; or body and foil, or body and neck and foil to groups of 4, 6 or 8 containers simultaneously for capacities of 80, 120 or 160 per minute.

In choosing the type of labeler, certain essential points should be borne in mind:

- The type of label material to be handled whether plain paper, varnished or lacquered, or foil labels or metallic seals.
- 2. Whether the label is rectangular or odd shaped.
- 3. The type of bottle, jar or package to be labeled.
- 4. Range.
- 5. Ease of changing from one size to another.
- 6. Cost of change parts and their simplicity.
- 7. Control of the adhesive application.
- 8. The cleanliness of the labeling job.
- 9. The accuracy of the labeling job.

- 10. Accessibility of the machine in the plant.
- 11. Productive capacity that will be required.

Round can labelers

The labeling of round cans, such as are used by the food, paint, soap, lubricant and other industries, presents a problem which is different from the general labeling as described above. The label as used on this package is of the "wrap around" type, the extremities lapping over each other. Consequently, for this purpose, round can labelers have been designed, both of the semi- or hand-fed and fully automatic types.

There is a distinct difference in these two types in that the former covers the label with adhesive over its entire surface, the latter applying adhesive partly to the can body and only to the glue lap of the label.

In the semi-automatic machine, the can as well as the label are introduced manually and the finished article ejected by hand as well. Production, as on all hand-fed machines, again depends on the operator, so that from 4000 to 6000 cans can be labeled per eight-hour day, the variance depending on the size of the package, the facility of bringing the work to, and taking the work away from, the machine and, as stated, the dexterity of the operator.

These machines have fairly large ranges and require no change parts, the range being self-contained. They are well adapted to small runs, frequent changes and for packages requiring the label to be adhered over the entire body surface.

In the fully automatic round can labelers, the cans roll down a track and have "spots" of adhesive applied. These "spots," when the can passes over the label hopper, pick up the label which is then wrapped around the can, the label having a glue strip applied to the lap. This glue strip forms the closing joint.

In preparing labels for these machines, to get the best results the grain of the paper should run parallel to the longest dimension.

Label gummers

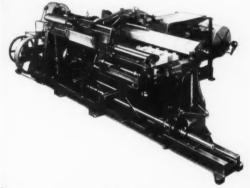
Label gummers are not truly labeling machines, for they are not used to actually apply the label to its point of final contact with the package. Their function is, rather, to apply a gummed coating to an uncoated label or to moisten a pre-gummed label and thus to facilitate hand application.

A number of types and variations are available, but all have the general characteristic of a motor drive rotating a cylinder partially immersed in, or in contact with, glue or gum or water.

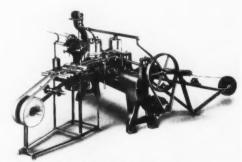
Coding devices

A number of devices have recently been developed for applying code numbers or other serial identifications to labels. These are usually punch-type machines designed for use near or adjacent to the labeler. They operate at speeds of as high as 250 labels per minute and are available in types that print or perforate. Changeover of code symbol is usually readily accomplished with but a short shut-down period.





Automatic Convolute Fibre Can Winder



Knowlton Spiral Tube Winding Machine

To Send Out the Nation's Goods "Better Dressed" is the Job of These KNOWLTON FIBRE CAN MACHINES

These new Automatic Fibre Can Machines are the result of Knowlton's Fifty Years' experience in the packaging equipment field and incorporate a host of special features which are acclaimed as revolutionary by manufacturers and packers alike. The part which these KNOWLTON Machines play in increasing sales {through Package Design} is a mighty important one and is a task which they perform in an amazingly simple and economical manner.

The KNOWLTON AUTOMATIC CONVOLUTE WINDING MACHINE, for instance, accepts paper stock from the roll and *automatically* produces fibre can bodies in round, rectangular, or irregular shapes—applies the adhesive and lithographed labels and delivers the completed can bodies ready for the seaming on of the tin tops and bottoms.

This machine is equipped with an automatic slitting and labeling attachment which permits production of from one to five complete can bodies at a time during the winding process. It produces fibre cans up to 20" in height or multiples thereof.

THE KNOWLTON SPIRAL TUBE WINDING MACHINE is another notable example of modern efficiency. It is the *fastest* and most economical machine for winding paper tubes or cores ranging from 2 to 19 ply and its product is unsurpassed for tube strength, accuracy and high quality in the making of food containers, cosmetic boxes, tissue cores, heavy mill cores, mailing tubes, dry battery cores, spools, etc.

Write or call our nearest office for complete information regarding these two KNOWLTON MACHINES.

M. D. KNOWLTON CO., ROCHESTER, N. Y.

BOSTON 637 Massachusetts Ave. NEW YORK 203 Wooster St. Pacific Coast Representatives
H. W. BRINTNALL CO.
Los Angeles, San Francisco, Seattle

CHICAGO 9 S. Clinton St. TORONTO, CAN. 260 Richmond St., W.

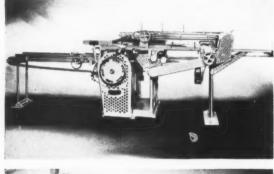
Wrapping equipment

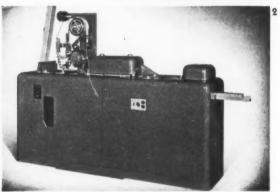
HE wrapping of packages can be divided into two broad groups: loose wrapping and tight or wet wrapping, so called because the inside surface of the wrapper is covered with glue. Wet wrapping has taken its place in the wrapping of cartoned goods, such as soap powder, salt, sugar, cereals and other food packages, because of its ability to prevent insect infestation and leakage. Nevertheless, because of its practicability and adaptability, loose wrapping has come into wide general use for many purposes in present day packaging.

At present, more and more producers are realizing that the sales value of a package is considerably enhanced when that package is securely wrapped and sealed. In addition, this package must retain its attractiveness after the outer wrapper has been removed. The loose overwrap is the answer. Especially is this true in the confectionery trade where, in most cases, a fancy box is overwrapped in some kind of transparent material. Moisture-proof cellulose can be used where a fairly airtight, moisture-proof package is required.

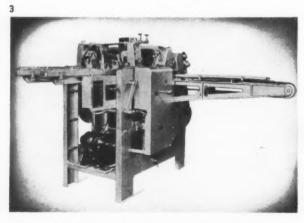
When private brands for different customers are to be handled, plain cartons may be wrapped in printed materials or in unprinted wrappers and labels, for identification and appearance. The loose wrappers can be held in place on the cartons by means of thin glue lines applied automatically, which will prevent the wrappers' slipping from the cartons after they have been opened.

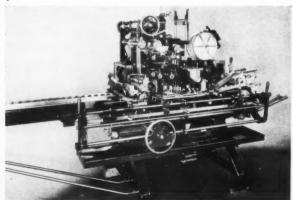
The loose wrap lends itself especially well to the placing of a circular or premium between the box or carton and the outer wrapper and where a revenue or tax stamp is necessary, as in the case of cigarettes. Provisions have been made on many automatic wrapping machines to make the feeding of the circular from a magazine a part of the wrapping operation.





1. Automatic wrapper with temperature control mechanism for use with rubber derivative sheeting. Courtesy Package Machinery Co. 2. Cellophane wrapper equipped with tear strip applying mechanism. Courtesy F. B. Redington Co. 3. Heat-sealing wrapper for irregular objects as well as cartons, boats, etc. Courtesy Richard Machine Co. 4. Machine for wrapping, double sealing and providing an opening string for individual tape bandages and similar type of packages. Courtesy Package Machinery Co.

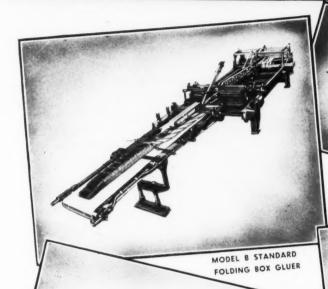




PACKAGING CATALOG

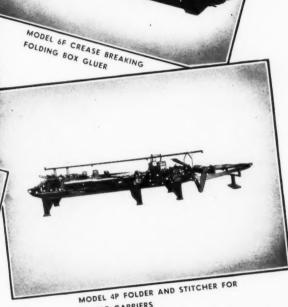
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MODERN MACHINES FOR THE BOX MAKING INDUSTRY

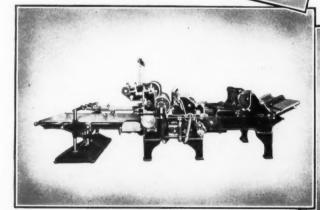




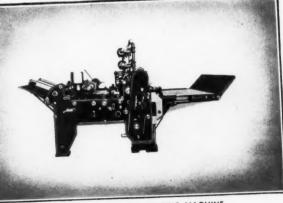
MODEL LG LARGE SIZED UNIVERSAL FOLDING BOX GLUER



BOTTLE CARRIERS



MODEL SA WIDE RANGE WINDOW APPLYING



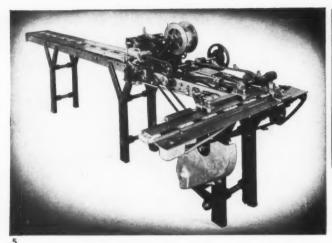
MODEL CC-B WINDOW APPLYING MACHINE

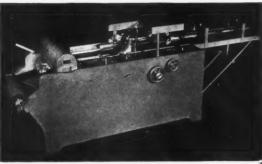
INTERNATIONAL PAPER BOX MACHINE CO. 315 MAIN STREET, NASHUA, N. H., U. S. A.

Canadian Representatives MANTON BROS., LTD. 97 ELIZABETH STREET TORONTO, ONTARIO

English Representatives ANDREW & SUTER, LTD. 23 GOSWELL RD., ALDERSGATE LONDON, ECI, ENGLAND

Australian Representatives S. COOKE PROPRIETARY, LTD. MELBOURNE AUSTRALIA





5. Fully automatic constant speed adjustable wrapper with tear tape attachment. Output up to 400 per minute. Courtesy Scandia Manufacturing Co. 6. Automatic banding machine. Speed 35 per minute. Courtesy Miller Wrapping & Sealing Machine Co.

The greatest advantage of the loose wrap is, of course, that it can come in contact with the article to be wrapped without the need of an inner protective covering. Individual pieces of candy are cut and sized on the same machine and then wrapped in transparent cellulose or waxed paper with the ends folded or twisted. Irregular pieces of chocolate candy are wrapped in foil. Many different sizes and shapes of candy bars are wrapped in cellulose, paper or waxed paper and the addition of the electric eye makes possible the use of printed wrappers in roll form. Various kinds of pops are now being wrapped in waxed paper or heat-sealing cellulose on automatic machines. Bread and cakes, too, and bars of soap lend themselves equally well to the loose overwrap, as do, also, towels, paper napkins, cigars, yeast and countless other articles.

It is only recently that the use of automatic wrapping has been considered in the frozen foods industry and here the loose wrap is necessary. A wrapper which can be heat-sealed will withstand the low temperature conditions necessary in packaging and preserving frozen foods and waxed paper or heat-sealing cellulose is used. Both of these materials are, of course, obtainable in printed roll form and the electric eye can be used to register the printed panels properly.

Other uses have also been found for carton and box wrapping machines. Automatic bundling of cartoned

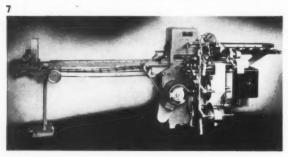
merchandise is a comparatively new development and is very popular with the manufacturer who is confronted with the problem of distributing his goods economically. The cost of paper wrappers is considerably less than that of pasteboard containers and the lower weight of paper as compared with the pasteboard will materially reduce shipping costs, especially where the shipping distance is fairly substantial and particularly when paper shortages cause high prices of board.

The advancement of machine wrapping has also resulted in the development of many new machines of a more specialized nature than those described above. Included in this group are machines for wrapping cakes of soap, bars and pieces of candy, individual cubes of sugar, cigars, packages of cigarettes, yeast cakes, fruit drops and mints and many similar articles and packages. All of the popular types of wrapping materials can be handled by these machines and, here again, electric-eye registration has been important. The wrapping operation on these machines has also been improved to decrease the amount of wrapping material needed. Especially is this true in the confectionery trade, in the wrapping of candy pops, where the use of a tight twist, heatsealed, has decreased by about 20 per cent the amount of wrapping material needed.

While box or rectangular object wrapping is an important part of the wrapping machine art, it is only one part. For candy, machines are available to take the candy in plastic form, form it, cut it and wrap it, either with folds or with twisted ends and speeds can be attained up to 500 or 600 a minute. With twisted wrapping, the machine can be arranged so that the twisted ears can be colored and colored inserts can be put inside the wrapper. Old standbys, such as kisses or caramels, can be dressed up now in a highly attractive and salable form and, as a result, the merchandising of candy is taking a new lease on life.

Recently the wrapping of pound and sliced pound cake in transparent cellulose has become quite prevalent

7. Automatic machine for wrapping irregularly shaped confectionery bars. Courtesy Package Machinery Co.



PACKAGING CATALOG

If it's Appearance—Improvement
or Lowered Production—Costs in

LABELING



Two models of fully automatic Labelrites; above, 120 bottles per minute; below 120 bottles, labeled <u>both</u> sides!

You'll want a LABELRITE for Quantity runs,

The Pony or Fully Automatic Labelrites for hand or conveyor operation embody speed, perfect register; elimination of "bottle-wiping" at inspection, and many other distinct features which make for production economies; speeds from 50 per minute up; on 2-side, or 2-at-a-time units, capacities from 100 labels to 240 labels per minute, depending on work to be done.



The "PACE-MAKERS" for Hand Labeling



PACEMAKER, is a sturdily built Table Gummer, for speedy gluing of labels; micro-adjustment, self cleaning, available in five sizes 6 to 27 inches wide; and special attachments provide for gluing heavy or flexible card stock.

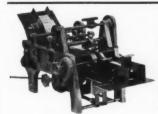


NEW JERSEY MACHINE

1616 Willow Ave.,

Hoboken, N. J.

Chicago office-325 W. Huron St.



CODE-O-MATIC; the unit for printing stock or batch numbers on labels for identifying contents; made to handle various sizes of labels; used by food, drug and other manufacturers. (at left)

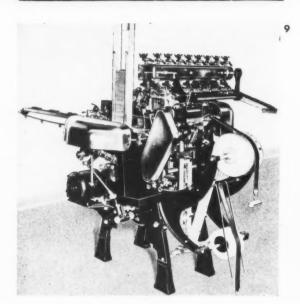
MOTOAIR, the Pump for Vacuum or pressure; visible lubrication system, filter for providing oil-free air; no pulsation, no belts, gears or drives. More compact, it occupies slightly more space than its motor, since it is motor-and-pump in one integral unit. (at right)



PACKAGING CATALOG

in the East and, as a new means of merchandising cake, it is becoming popular. To do this economically, the cake bakeries have had to set up their production for automatic wrapping as the cost of large batteries of girls for wrapping the cake by hand proved too expensive. An automatic machine which accomplishes this purpose is equipped with a band-labeling attachment and cardboard inserting mechanism.

A newer development along the lines of registration is the use of a miniature printing press, using quick-drying aniline ink and geared to the paper feed of the machine. The press prints material as it is being fed from the roll into the machine. Registration is automatically taken care of, without the use of an electric eye.



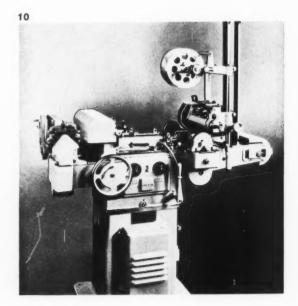
The use of strong wrapping materials, such as cellulose, has resulted in the development of easy-opening devices such as tabs, tapes and machine-made nicks to facilitate the opening of the packages. Such devices are now being used extensively on such small packaged goods as cigarettes, fruit drops and chewing gum.

The wrapping of chewing gum is receiving a great deal of attention at present because of the development of high-speed automatic wrapping machines. A machine is now available to wrap small individual sticks of gum at a speed in excess of 600 a minute. The machine will apply an inner wrapper fed from a roll and a printed band fed in sheet form. A thin strip of adhesive will glue the outer wrapper to the inner and prevent its slipping off the end of the stick. Regular sizes of individual sticks are being wrapped with an inner roll fed wrapper and an outer printed label, at speeds up to 400 a minute.

If the individual stick wrapper and a package assembler and wrapper are used together, the complete wrapping job will be a continuous and automatic one.

In considering machine wrapping, three elements always enter the picture—speed, adjustability and price—and the three have an intimate relation to one another. The more specialized the machine, the higher is possible production, and the more difficult it is to change the size. At one extreme are the high-speed chewing gum machines just mentioned; at the other extreme are the carton wrapping machines, based on the principle of bread

8. High-speed soap tablet wrapper feeds either from magazine or from roll with electric eye register. Photo Courtesy Package Machinery Co. 9. Machine for wrapping candy bars or other irregularly shaped and delicate products. Courtesy Modern Equipment Corp. 10. Fully automatic constant motion wrapper runs at speeds up to 380 packages per minute. Courtesy Package Machinery Co.



PACKAGING CATALOG

CONVEYER COMPANY Ellwood City, Pa. San Francisco, Cal. 166 Tenth St. Port Hope, Ont., Can.

Engineers and Manufacturers of Package Handling Equipment

CONVEYER TYPES TO MEET EVERY REQUIREMENT



ROLLER CONVEYERS:

Light, standard, and heavy-duty types.

WHEEL CONVEYERS:

Light, standard, and heavy-duty types.

BELT CONVEYERS:

Roller bed and slider board types, using stitched canvas, solid woven rubber covered, rubber, duck, steel mat, and wire mesh belts. Variable speed drives.

LIVE ROLLER CONVEYERS (Belt Driven)

LIVE ROLLER CONVEYERS

(Chain Driven)

PALLET CONVEYERS: Wood or steel pallets, level and inclined types.

CONTINUOUS APRON CONVEYERS:

Interlocking pallets.

PUSHER BAR CONVEYERS:

Level, inclined, and vertical types. Automatic receive and discharge stations.

DRAG CHAIN CONVEYERS: Single or multiple strand.

TROLLEY CONVEYERS:
Light, medium, and heavy duty types, incorporating ball bearings or oilless bronze bushings. Bearings may be grease packed or greaseable. Attachments and to a sit consequities bearings. ments made to suit commodities being

ELEVATING CONVEYERS:

Suspended carriage types. Automatic receive and discharge stations.

HOISTS (Electrical)

Automatic receive and discharge stations.

HOISTS (Pneumatic) Automatic receive and discharge sta-

SPIRAL CHUTES:

Single and multiple tread, open and enclosed types.

SPIRAL ROLLER CONVEYERS:

Two or three-rail construction with in-termediate receive and discharge sta-

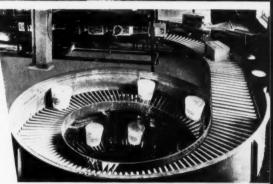
PORTABLE CONVEYERS:

Designed to specifications. Adapted to

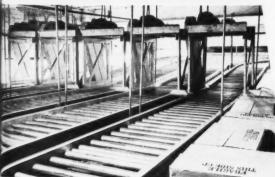
specific requirements. PILE-ELEVATORS:

For piling sacks, bags, bales, bundles, boxes, and cartons.





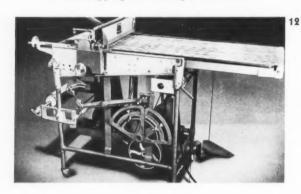




THE CONTINUOUS FLOW PRINCIPLE OF HANDLING MATERIALS



11. Semi-automatic machine for cellophane wrapping in the thin or the flat package, crimped style. Courtesy Miller Wrapping and Sealing Machine Co.



12. Automatic sheeting and gluing machine for cellophane, acetate, glassine, waxed paper, kraft, etc. Courtesy Miller Wrapping and Sealing Machine Co.



13. Machine for wrapping irregularly shaped articles in rubber hydrochloride sheeting. The material feeds from a roll and is heated under electric plates. The product is then placed into position and twisted to form the seal.

Courtesy Stokes & Smith Co.

wrappers, where a size change can be made in less than five minutes over a wide range, but whose speed is limited to slower operations.

Semi-automatic machines

Semi-automatic wrapping machines require a smaller investment and permit extreme flexibility with regard to size and nature of packages. This makes them valuable to both the small and large scale manufacturer. It gives the former all the wrapping equipment he needs and allows the latter an economical means of wrapping his smaller runs, producing novel packages or testing new packages on the market at little expense.

Versatility of the semi-automatic wrapping machine extends beyond mere "adjustment range." It permits the wrapping of irregular, loose or stacked items or packages, because of close contact of the operator with the folding operation. The odd package can be guided, by hand, just enough to make allowance for its peculiarities. A few examples in this category are packages composed of several loose pieces, such as four bars of soap and a wash cloth.

The semi-automatic machine will wrap with a variety of materials, either heat- or glue-sealed, including heat-sealing cellophane, waxed papers, waxed foil and the non-heat-sealing materials, such as plain transparent sheets, kraft and other ungummed or unwaxed papers. If a manufacturer of pharmaceuticals should desire to wrap his packages first individually in heat- or glue-sealing cellophane, then bundle them by dozens in kraft paper, the semi-automatic would perform both jobs, laying glue on the kraft paper to seal it.

Instant adjustability makes the semi-automatic wrapping machine suitable for very short runs. On a moment's notice, it can be changed over from the smallest to the largest package within its range. Adjustments have been so simplified that a girl operator, unassisted, can make a complete size change without tools.

Speed of semi-automatic machines, while naturally less than those of the full automatic, is adequately high to exceed, by many times, that of hand wrapping and wrapping by means of simple fixtures and jigs. In some cases, particularly where frequent adjustment is required, or where great economies in wrapping materials are possible, the semi-automatic shows even greater savings than the automatic. Each machine has its place and they seldom overlap, so determination of the equipment indicated for any particular job is not difficult.

Packages produced on semi-automatic machines are uniformly neat and well sealed, whether with heat or glue. When heat-sealed, the hot plates are kept under thermostatic control, so that there is no injury to either the wrapper or packages. Packages containing heat-perishable goods, such as chocolate, butter, icings, frozen foods and the like, can, if necessary, be passed quickly through the heat-seal region, so that a seal takes place, but the heat cannot penetrate far enough to be injurious. When glue is used for scaling purposes, the amount of flow and area of application can also be positively controlled, so that results are unerringly the



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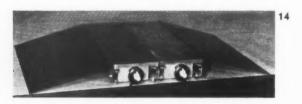
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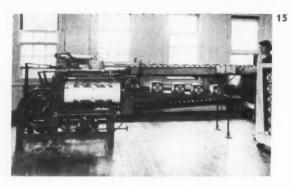
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to es, be he same and the machine user can have confidence in the uniformity of his product, both in appearance and protection afforded by the wrapper when applied by this efficient method.

Bottle wrapping is another achievement of the semiautomatic wrapping machine. Using many of the





14. Heat sealing plate with ramps to facilitate package movement. Courtesy Oliver Machinery Co. 15. Automatic tight wrapper for handling cartons. Courtesy Hayssen Mfg. Co.

principles of the package wrapping machine to retain the valuable feature of adjustment for many sizes, this equipment also provides a clever means of neatly tapering the cellulose wrap from the shoulder to the cap of the bottles.

Ordinarily, the semi-automatic machine folds and seals the wrapper over the bottom and two ends of the package in the manner that an ordinary biscuit carton is usually wrapped. However, where a very shallow package is to be wrapped, where the ends do not offer sufficient depth for a satisfactory end seal, the end folds can be tucked under the ends of the package or "underlapped." This feature is useful on flat packages, such as cake slices, sheets of writing paper and even extension edge candy boxes, which are recessed at the sides and ends so that a conventional seal is impractical.

The semi-automatic wrapping machine can also be furnished with a number of money-saving attachments, such as a coding device for perforating letters or numbers in the wrapper, or a banding attachment for attaching printed bands to the wrapper.

Hand wrapping fixtures

A number of simple and inexpensive tools have been developed, in recent years, to aid hand operators in wrapping heat-sealing materials. These include hot plates of various types upon which a package may be placed momentarily to achieve a seal. Where line seals or spot seals are desired, special heating irons, equipped with thermostatic controls and similar in appearance to soldering irons, are sometimes utilized.

Tight wrapping equipment

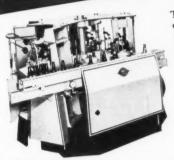
IGHT-WRAPPED packages are standard with many manufacturers and packers of food and grocery products. First adopted a number of years ago by some of the cereal manufacturers, where its greatest advantage was in keeping the weevil from getting into the contents, the tight-wrapped package has been adopted for use with many other products, such as flour, soap powders, salt, coffee, cereals, etc.

With the tight-wrapped package, the plain unprinted cartons are filled and sealed in the regular way. There are a number of different makes of semi-automatic and full automatic carton filling and sealing machines on the market. After the carton is filled and sealed, it is fed into the tight-wrapping machine which automatically feeds the paper label as the carton enters the wrapping machine, glues the label all over on the blank side with a thin coating of adhesive and wraps it tightly

around the filled carton, making a perfectly tight-sealed, non-sifting, weevil-proof and attractive package.

Various types of cartons with inside bags or liners can be used with the tight-wrapped package, as well as different types of opening devices. In the salt industry, the tight-wrapped package is now being used by many of the leaders and one of the most satisfactory salt packages is a carton made of asphalt-lined board which is tight-wrapped on the outside. For coffee, wax or parchment paper liners are generally used on the inside of the carton and the cartons are tight-wrapped on the outside. For flour, the regular chipboard carton is used and some of the packers have these made with a blue lining on the inside which gives a whiter appearance to the flour. Various combinations of cartons, liners and labels can be used to insure the product getting to the consumer in the best possible condition of presentation.

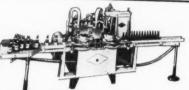
Geration Gamous for STEADY, EFFICIENT COST-REDUCING OPERATION



LIQUID TRIPLEX LABELER The Liquid Triplex is the latest addition to Liquid's line of completely automatic labeling machines. This high of completely automatic labeling machines and its three sets of label holders and speed unit, with its three sets of label, is capable pickers and with 12 heads on the turn table, is capable of highest speed production of perfectly labeled control of highest speed production of perfectly labeled control in the control of perfectly labeled control of perfectly labele pickers and with 12 heads on the turn table, is capable of highest speed production of perfectly labeled containers working with body and neck labels. Foiling attachment is available for use where body, neck and foil is available for use where body, neck and foil is desired. The machine features a new container worm feed and discharge mechanism especially designed for feed and discharge mechanism especially designed rate, high speed operation. Despite the high production rate, feed and discharge mechanism especially designed for high speed operation. Despite the high production rate, however the lebeling operation is performed clowly and night speed operation. Despite the high production rate, however, the labeling operation is performed slowly and with overage accuracy.

with extreme accuracy.

The "Triplex" Labeler brings all of the advantages of the "Triplex" Labelers and "Duplex" Labelers the well-known Liquid "Single" and "Duplex" Labelers plus its tremendously increased production rate. with extreme accuracy.



LIQUID SINGLE LABELER

The Liquid "Single" Labeler has a capacity of 80 containers per minute and is fully equipped for labeling one size of bottle with either body or neck labels or both. Where foiling is desired the unit may be equipped with foil attachment. The precise construction of Liquid Automatic Labelers makes them unusually accurate in the placing of labels and their high speed cuts labeling costs to the bone. The Liquid "Single" Labeler has



LIQUID DUPLEX LABELER

The Liquid Duplex has proved itself for more The Liquid Duplex has proved itself for more than a quarter of a century. It is equipped with ten heads on the turn table and with two sets of label holders and pickers to handle 120 containers per minute with ease in plants requiring large capacity labeling production. All three machines, Single, Duplex and Triplex, are completely automatic in operation. Containers are fed, labeled and discharged without being touched by human hands.



LIQUID STANDARD LABELER

A semi-Automatic Machine in which bottles are fed and removed by hand, but in which the labeling operation itself is performed automatically. The Liquid operation user is performed automatically. The Liquid Standard will label almost any size of bottle with body, or body and neck labels, at a capacity of 40 poory, or poory and neck labels, at a capacity of 40 containers per minute depending only on the speed containers per minute depending only on the speed of the operator. Foiling attachment available where desired. The Standard is ideal for use in those plants desired. The Standard is ideal for use in those plants requiring a limited amount of labeling, or where production requirements embody the use of different sizes of containers.



THE LIQUID CARBONIC CORPORATION 3100 S. Kedzie Avenue, Chicago, Illinois

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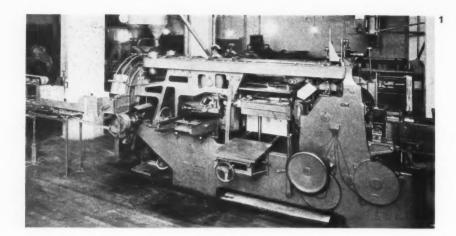
LIQUID CARBONIC CANADIAN CORPORATION, LTD.

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*Liquid Labelers are well known in the industrial and food packaging industries for their steady, efficient, cost-reducing operation in hundreds of plants throughout the country. Complete information may be obtained by writing for a copy of the catalog "Liquid Labelers." Address your request to the company at 3100 South Kedzie Avenue, Chicago, Illinois, or (in Canada), To Liquid Carbonic Canadian Corporation, Ltd., 2120 Cabot Street, Montreal, Quebec.

*



1. Tight-wrapping installation at the plant of a Western milling company. Courtesy Stokes & Smith Co.

Another advantage of the tight-wrapped package is for the packer or manufacturer who packs private label brands for different customers. If he uses the tight-wrapped package, he can use the same carton and merely have different labels for the different brands. This means a saving as it is not necessary to carry a number of different printed cartons on hand. With the tight-wrapped package, various types of labels giving different styles of end folds can be used to suit the conditions. Some labels are die-cut so that each end flap of the label is glued down separately. Others are rectangular, making a gusset fold on the end.

Varnished tight wraps

Recently the varnished label has been adopted by a number of packers and manufacturers using the tight-wrapped package and the package tight-wrapped with the varnished label makes an ideal container for many food and grocery products. The varnished surface makes the package attractive; the colors show up to advantage and the varnished surface will not accumulate dirt or dust as quickly. Also, the package is more moisture-proof since the varnish gives an extra coating on the outside. Another variation of the tight-wrapped package is the one

wrapped with a metal foil wrap. In this case, the labels are made of metal foil laminated to paper so that the outside of the label is the printed metal foil and the inside is paper which can be glued uniformly to the carton.

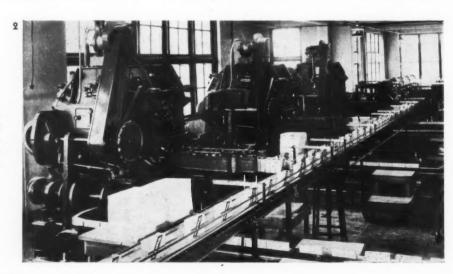
Another recent development combines the advantages of tight-wrapping and wax-wrapping at considerably lower cost. This is accomplished by printing and waxing only one side of the sheet of paper and gluing the underside to all four sides and top and bottom of the plain carton. This development has been made possible through the perfection of electric-eye methods of registration which permit roll-feeding of the printed and waxed stock. Roll-feed and electric-eye registration can also be applied to regular unwaxed tight wrappers and this is an advantage because roll-printing is less expensive than printing in sheets.

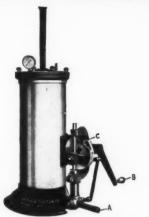
Adhesives

Various kinds of adhesives can be used to suit the requirements. For the ordinary paper tight-wrapped packages, a cold vegetable dextrine adhesive soluble in water is used. For varnished and foil wraps, there are several kinds of moisture-proof adhesives and also latex adhesives on the market.

(See Adhesives, page 437)

2. Battery of tight-wrapping machines delivering wrapped cartons to a collecting conveyor. Photo courtesy of the Pneumatic Scale Corp., Ltd.





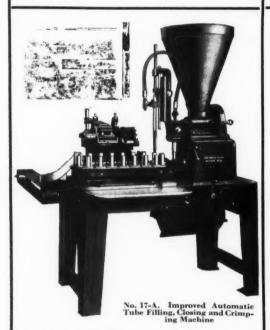
No. 3 Hand Paste Filler



Hand Tube Closer



Foot Power Crimper





COLTON HAND OPERATED MACHINES

No. 3 Collapsible tube filler (hand operated) for tubes up to 1'' x $5\frac{1}{2}''$ long.

Hand operated tube closer made in two sizes and styles to seal tubes with the Colton Clipless Closure or to seal tubes for applying clips.

Foot operated crimper for applying final corrugation to the closed end of the Colton Clipless Closure which gives it a decorative appearance as well as greater rigidity to the closed end of tube.

We also furnish this same machine without the crimping jaws for applying clips.

Our catalog No. 11 illustrates a variety of fillers and closers to suit production required. Please make us acquainted with your requirements and capacity, and we will be pleased to recommend machines best suited for your purpose.

YOUR IMMEDIATE ATTENTION IS CALLED TO THIS NEW No. 17 IMPROVED AUTOMATIC TUBE FILLING, CLOSING & CRIMPING MACHINE for SEALING COLLAPSIBLE TUBES. TYPE "A" for PASTE. "B" for POWDERS. "C" for LIQUIDS.

The famous COLTON CLOSURE machine has been greatly improved and simplified. It now offers you these new advantages:

- 1. Motor is underneath, out of the way.
- 2. Equipped with REEVES drive for speed control.
- 3. New design filling head gives a positive free smooth action of nozzle.
- 4. Start and stop push button switch.
- 5. Two hand levers. One for starting the machine proper. One for stopping and starting filling mechanism.

Write today for a sample tube and full information on this machine.

ARTHUR COLTON CO.

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PACKAGING CATALOG

Carton loading and closing equipment

ARTONING machinery, as referred to in this article, includes machines, which, in general, feed a collapsed carton from a magazine, expand it, insert a solid item or a number of solid items into the carton and then close the carton. Among the items normally packaged on cartoning machines are tubes of tooth paste, shaving cream, etc.—bottles, jars, razor blades, candy coated gum, rubber jar rings, bouillon cubes and many other miscellaneous items including printed matter. Generally speaking, the type of cartoning machine under discussion is rarely or never used in connection with dry, free-flowing items such as coffee, cereals, etc., which need to be weighed before they are inserted into cartons. For this type of equipment see "Weighing and Filling Dry Products," page 460.

Whether or not a prospective purchaser of cartoning machines or a producer of cartoned products is warranted in planning for the use of cartoning machinery depends upon a number of factors. First, of course, there is the matter of the number of packages he is required to promission of packages to carton machinery suppliers who can, after a study of all the factors involved, recommend either an existing machine in their lines or advise concerning the modification of one of these machines.

In general, there are two types of cartons that are handled by automatic cartoning machinery. Most commonly used is the tucked carton equipped with top and bottom flaps which are tucked into position by the fingers of the cartoning machine. The other type is what is known as the glue end carton. This is used in cases where tamper-proof seal is desired or where the weight of the product would open the bottom tucks of

duce daily or weekly. Secondly, there is the nature of

his package. Some cartoned products can be packaged

quite economically by hand. Others, because of their

more involved nature, are prohibitively expensive to

produce by hand. The best procedure involves the sub-

glued carton which is set up and closed automatically. This type is used for packaging crackers, lard, shortening. The variety of cartoned products is tremendously broad. Packages of razor blades stand, perhaps, at the end of the size scale. From this point, they range up-

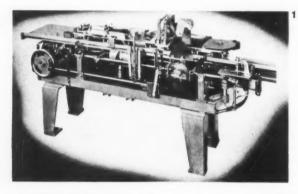
the tucked type. In some instances, cartons are used

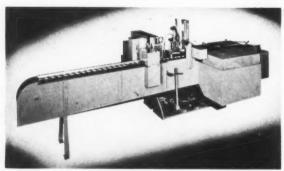
with a combination of glued flaps at the bottom and

tucks at the top. A third type is the die-cut but un-

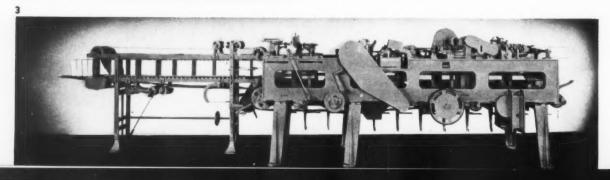
wards to the large cartons used for macaroni or for cleansing tissues.

The efficient speeds at which cartoning machines now operate depend to a great extent on the nature of the product to be handled and the size of the package. Several well-known five-cent packages of candy coated chewing gum, containing twelve tablets, are automatically produced on machines that operate at speeds of 100 to 160 packages per minute. Safety razor blades are automatically counted out and cartoned at speeds as high as 240 packages per minute. Bars of soap and similar products are automatically cartoned at speeds of 150 or sometimes more per minute.





Automatic carton folding and closing machine. Courtesy Peters Machinery Company.
 Automatic, high-speed, continuous-loading cartoning machine with mechanism for folding and including circular in carton. Has automatic feed cut-off. Courtesy F. B. Redington Co.
 Automatic carton closing and sealing machine. Courtesy Johnson Automatic Sealer Co. Ltd.



PNEUMATIC'S

"Start to Finish" PACKAGING SERVICE

Avoid divided responsibility. Pneumatic offers you the opportunity to install complete co-ordinated packaging hook-ups designed, engineered, built and serviced by one company.



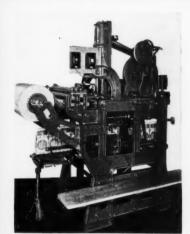
SEMI-AUTOMATIC ALL PURPOSE WEIGHER
—two models for 2 ox. to 3 lb. loads of pees, beans, all grinds of coffee, rice, etc., in bags, tins or cartons.

Over 80 different automatic and semi-automatic machine models for:

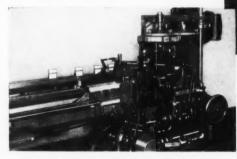
Carton Making Lining
Feeding Filling
Forming Weighing
Bottom Tucking Packing
Bottom Sealing Lining Closing
Top Tucking Tight Wrapping
Top Sealing Labeling
Wax Tight Wrapping

ALSO:

Bag Flour Packers Can Fillers
Double Package Makers Can Cappers
Tea Baggers Can Labelers
Shoe Box Machinery Powder Fillers



CARTON LINER—cuts glassine, waxed or plain papers from a roll, then forms, seals and inserts the bag.



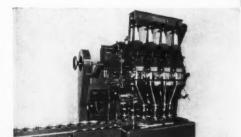
HI-SPEED CARTON FEEDER & BOTTOM SEALER one of nine different models for feeding, forming and bottom sealing or tucking cartons at speeds ranging from 10 to 105 per minute. All models adjustable for different carton sizes within certain limits.



DOUBLE PACKAGE MAKER, AUTOMATIC FILLER & ROTARY TOP CLOSURE—a complete 3 machine hook-up for producing a package within a package. Pneumatic's new Double Package consisting of a printed carton with individual inner bag liner offers added insurance for your product against loss of flavor and freshness. An ideal container for dried fruits, pudding powders, gelatin dessets, confectioners sugar, prepared flour, individual servings of cereal, tea, coffee, etc. Send for a sample package today.



TOP SEALER—for glue-sealing tops of cartons. Other models available for folding liners and top tucking at speeds ranging from 25 to 100 per minute.



FOUR SCALE NET WEIGHT COFFEE WEIGHER one of Pneumatic's 25 different types of gross and net weight weighers for handling free flowing and semi-free flowing materials. Speeds range from 10 to 100 per minute.





TIGHT WRAPPER—one of four machines for gluing printed tight wrappers to shells. Entire inside surface of wrapper is glued to insure strong sift-proof, insect proof package. Speeds from 40 to 70 per minute are entirely practical.

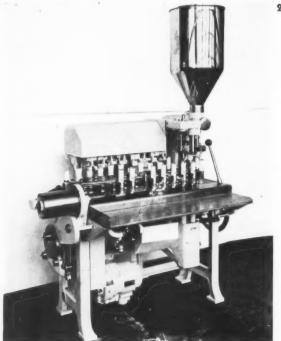
PNEUMATIC SCALE CORP., LTD., 77 Newport Ave., North Quincy, Mass.

Collapsible tube filling

HE selection of tube filling equipment depends on three important factors: first, the consistency of the material; second, the range of tube sizes; third, daily production.

Liquids and semi-liquids that are self-leveling and will flow by gravity are the least difficult to handle as the material will run into the tube from the top, will fill uniformly and will be free of air bubbles. Furthermore, the material can be easily fed to the hopper of the machine and will flow down through the hopper, by gravity, into the filling mechanism. Tooth pastes, shaving





creams and similar materials that will not flow by gravity must be filled by placing the filling nozzle down into the bottom of the tube and filling from the bottom up to prevent air pockets. In most cases, the filling pump will pull the material down into the hopper, but if the material is "short" and breaks apart, an impeller type agitator must be used to force it down through the hopper. Creams, ointments and similar pastes that will not flow by gravity can sometimes be made to flow by warming them. The machine, in this case, is equipped with a jacketed hopper and an agitator to keep the material at a uniform temperature and it is also equipped with heated filling parts. Before adopting this method, it is important to determine whether the material shrinks on cooling, as any shrinkage will draw the walls of the tube in and give it an empty appearance.

The majority of the machines on the market will handle tubes up to $1^{1}/2$ in. in diameter by 6 in. long and many of them will handle tubes up to $1^{1}/2$ in. in diameter by 7 in. long. Hand operated equipment will handle somewhat larger tubes, but the semi-automatic and automatic machines must be modified to handle tubes over 7 in. in length.

The production requirements will, of course, determine whether hand operated, semi-automatic or full automatic machines should be used. All three types are available and range in capacity from 100 or less tubes per hour up to 7000 an hour.

Machine types

A complete outfit for filling, closing and clipping collapsible tubes may be purchased for as little as \$275 and will put up from 10 to 20 tubes per minute, using three operators. Two types of hand operated filling machines are available, one for liquids and semi-liquids and the other for pastes. Both are easily adjustable and both fill the tubes as accurately and as cleanly as do power-driven, automatic equipment. The filled tubes are then transferred to a small, hand operated folding machine which applies a double fold or which can be furnished to apply the quadruple fold. A third operator indents the folds such as on clipless closures, or clamps on a clip,

^{1.} High-speed filler designed to fold the cut o and, after filling, apply a welded seal. Photo, The Karl Lie Machine Co. 2. Collapsible tube filling, folding and amping machine. Photo, Arenco Machine Co., Inc.







U. S. BOTTLERS

Machinery Co.
4032 N. ROCKWELL ST, CHICAGO

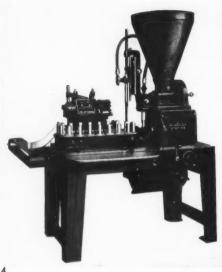
MANUFACTURERS OF

PUMPS
CAPPERS
FILTERS
CONVEYORS
WASHERS & DRYERS
WASHERS
CORKERS
FILLERS

PACKAGING CATALOG

7





3. Machine for handling liquids, ointments or pastes at a rate of 25 tubes per minute. One operator is required. Photo F. 1. Stokes Machine Co. 4. Automatic machine for tooth pastes, shaving creams, ointments, etc. Fills, closes and crimps automatically. Photo Arthur Colton Co.

by means of a foot operated press. Certain models can be equipped with electrically heated jaws for applying the hermetic seal described below.

A production of about 30 filled and sealed tubes per minute can be had by using a general purpose filling machine and then transferring the tubes to a second machine which folds the ends and seals them. Two operators are needed. In the case of liquids, it is possible to put a filling attachment directly on to the folding and sealing machine, in which case one operator can fill, fold and seal up to 30 tubes per minute. These machines can be equipped with variable speed drive, so that the speed of the machine can be adjusted for individual jobs.

For the manufacturer who has a varied line of products, a completely automatic tube filling, closing and sealing machine is available which will handle up to 50 tubes per minute with one operator. This machine will handle both pastes and liquids, since the tubes are raised up over the filling nozzle and are filled from the bottom up. The machine can be set to make a plain double fold, a quadruple clipless fold or the hermetic seal. The operator simply places the tubes into the tube cup and registers them so that the trade mark or printed matter on the tube will be in proper relation to the fold. Ejection is automatic on to a conveyor.

A full automatic machine is available with four filling heads capable of filling up to 120 tubes per minute. This machine automatically removes the tubes from the shipping cartons, registers the printed matter by means of a photo-electric cell and fills, closes and discharges.

The simplest type of closure is a plain double fold. This is neat and attractive in appearance and is sufficiently strong for materials, such as rubber cement and glues, that automatically harden and prevent further

seepage in the event they leak through the fold. It is also satisfactory for thin pastes and similar materials that are easily extruded and do not strain the fold when forced out of the top of the tube. This double fold can be strengthened considerably by indenting the metal.

Clipless closures

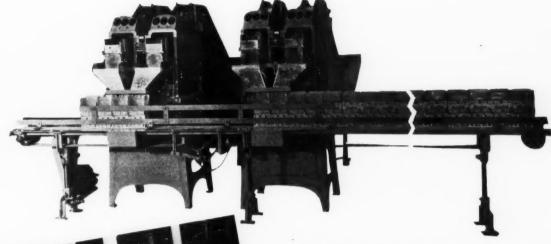
The so-called clipless closure consists of a quadruple fold, reinforced by corrugations. The ten layers of metal that result are as strong as a clip and considerably more resistant to seepage and leaks.

When the tube is folded, the walls come together and give the tube a wedge-like appearance. The volume of the tube is reduced considerably and the material is forced up toward the fold. For this reason, tubes must not be filled more than about $^3/_4$ or $^7/_8$ full.

The ordinary double and even quadruple fold is reasonably tight, but many materials quickly seep through and either corrode the tube or give it a very unattractive appearance. Many methods have been devised to seal the tube absolutely tight, with varying degrees of success. One method is the hermetically cemented closure. The tubes are coated, on the end where the fold is made by the tube manufacturer, with a special transparent cement. The tubes are filled and folded in the usual manner on regular equipment, but the crimping jaws are electrically heated and when the fold is corrugated by them, the heat fuses the cement and produces a tight seal.

Another tube sealing method, available on a patented machine of one manufacturer, uses a welding process to seal the tube walls together. This, it is claimed, permits a saving of up to three-quarters of an inch of material on each tube.

the ELEC-TRI-PAK







For Semi-Automatic or Automatic Weighing and Filling of All Dry Products

Potato chips to pills—that's the range of dry products handled on Triangle Elec-Tri-Pak Vibratory Feed Weighers. Uncannily accurate, easily changed from one product to another, versatile, self-cleaning—There's a model to meet the demands of any plant. Full details and literature on request. Just name your packaging job.

Triangle also builds a complete line of automatic and semi-automatic Weighers, Fillers, Auger Packers, Carton Sealers, etc., for handling all dry products. Write today.

TRIANGLE PACKAGE MACHINERY CO.

908 NO. SPAULDING AVENUE, CHICAGO

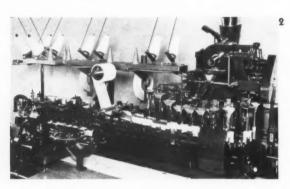
Los Ängeles 1501 Jefferson Blvd.
Dallas Tex. 4514 Gilbert Äve.
San Francisco 111 Main St.
Foreign Office: ... 44 Whitehall St., N. Y.

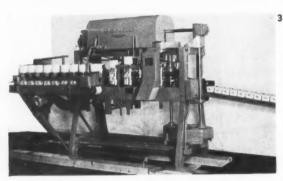
PACKAGING CATALOG

Bag filling and sealing



1. An automatic bag opener, feeder with weigher attaining a speed of thirty bags per minute. Courtesy B. F. Gump Co.



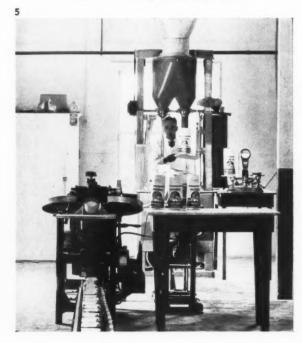




IUTOMATIC and semi-automatic equipment for the efficient closing of stiff containers such as has been available for many years, formerly made it almost imperative for the large producer of packaged goods to seek some form of stiff container, either a can or carton. Although the cost of these containers was considerably higher than that of paper bags, the saving in production cost frequently more than equalized the excess cost of the package itself. Thus, in most cases, the bag remained the unit for only the small producer who utilized all hand operations or combined hand or semi-mechanized bag opening and sealing operations with semi-mechanized or automatic filling operations.

Today the automatic machinery available in this field is capable of performing one or all of the operations included in the following list: bag feeding, bag forming, bag opening, bag filling, check-weighing, bag closing and bag sealing. Developed in almost every case to meet the specialized needs of a single producer or a single industry, these machines have come to form a group in

2. Tea bagging machine which forms fabric bags, fills them, sews closure and applies string and tag. Courtesy Pneumatic Scale Corp., Ltd. 3. Bag closing machine handling folded gusset bags, adding tin tie and sealing same. Courtesy Benj. C. Betner Co. 4. Automatic unit comprising bag feeder, scale, settling conveyor, bag sealer and rotary drier. Courtesy Consolidated Packaging Machinery Corp. 5. Duplex bag packer and weigher (in background) feeding to an automatic type bag sealing machine. Courtesy Stokes & Smith Co.



PACKAGING CATALOG

Exact Weight Scales for the entire Packaging Industry...



SHADOWGRAPH

The SHADOWGRAPH is a revolutionary advance in precision weighing. A light ray replaces mechanical indication to allow reduction in working parts thus producing greater accuracy and speed. Noiseless in operation—instantly ready to weigh by plugging into any electrical outlet. Featuring extremely fine sensitivity SHADOWGRAPH is dependable and accurate in any high speed modern packaging operation.

Model 1021 (below) is designed for carton, box and can packaging and weighing. Ideal for candy, lard, broken eggs or any product packaged to exact weight. Equipped with a top reading dial for floor or low bench operation. It requires no leveling for uneven floors. Comes with carrying handles for easy transportation in the plant. Accurate to 1/4 oz. Capacity to 53 lbs.



PRODUCTS—Quality pre-determined weight scales for modern packaging, checkweighing, controlling automatics, hand weighing.

EXACT WEIGHT Scales are the acknowledged leaders in the pre-determined weighing field. More than 50,000 corporations and companies in 53 industries from coast to coast use this equipment for checkweighing, controlling automatics and hand weighing on every type of production line in modern packaging.



-Features Tu-way tower and backset dial with slant tower indication; combines accuracy and speed performance for checking automatic machinery; extremely short platter fall (½°) which cuts scale depreciation. Accurate to 2½ oz.—Capacity to 3 lbs.



Model 273—End tower construction completely changes all standards by which modern high speed over and under weight scales are to be judged. Features—Short platter fall which multiplies operating speed and this feature materially reduces scale depreciation—compactness—less space on the bench—fits any production line—uninterrupted straight line production across the scale—heavier construction for added ruggedness. Accurate to ½ oz. Capacity ruggedness. Accurate to $\frac{1}{8}$ oz. Capacity-12 lbs.

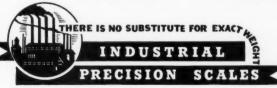


Model 8003-The COLUM-BUS, a general purpose scale furnished in white [porcelain enamel or nile blue as preferred. Features center tower construction with indicator travel of one inch to

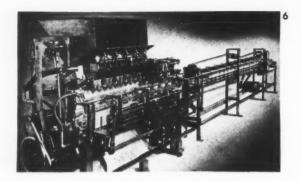
one ounce thereby removing the last excuse for inaccuracy in all checkweighing operations. Accurate to 1/8 oz. Capacity to 12 lbs.

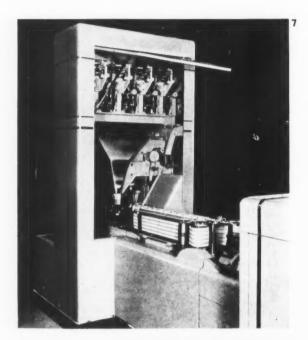


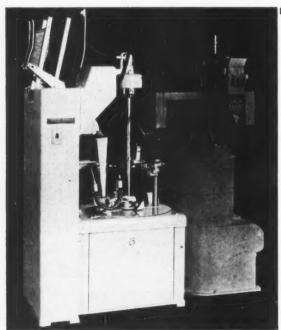
THE EXACT WEIGHT SCALE CO. 223 W. Fifth Ave. Columbus, Ohio



PACKAGING CATALOG

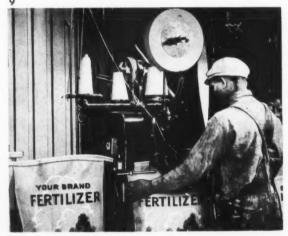


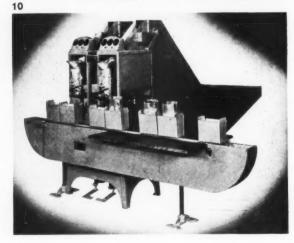




themselves. Since differing machines perform differing groups of operations, no single description will cover the entire field. A perusal of the photographs and captions which illustrate this article will, however, give the reader a pretty fair idea of the possibilities inherent in such machines. The introduction of automatic bag packaging machinery has, in some industries, resulted in a surprising change in the appearance of the bag itself since the automatic machine is capable of producing a bag closely approaching in appearance the neatness and attractiveness of the finest stiff containers. With this possibility, bag suppliers and bag users have turned from the cruder forms of bag decoration to the use of the more attractive and decorative outer bag materials.

6. Automatic bag feeding, weighing and filling, top folding and gluing machine. Photo U. S. Automatic Box Machinery Co. Inc. 7. Close-up view of the automatic bag sealer weighing unit, and discharge settling conveyor at plant of Albert Ehlers Co. Photo Consolidated Packaging Machinery Corp. 8. Magazine type bag feeder designed for the St. Regis Paper Co. Photo Consolidated Packaging Machinery Corp. 9. Tape sealer, sews heavy cotton cord over closing tape. Handles 12 or more bags per minute. Photo Bemis Bro. Bag Co. 10. Two section vibratory feed gross weigher with conveyor to weigh and fill potato chips in bags. Photo Triangle Package Machinery Co.

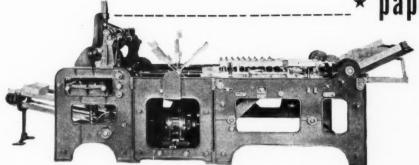




PACKAGING CATALOG

U. S. AUTOMATIC machines cover the packaging field

* paper box making



At left is our UNIVERSAL BRIGHTwood box MACHINE, a completely automatic model for producing high grade work, such as shoe, candy and hosiery boxes with turned-over ends and double sidewalls. It will also handle the regular single wall boxes, such as are produced on our widely known STANDARD BRIGHTWOOD BOX MA-CHINES.

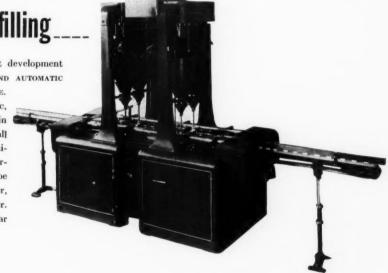
* cartoning ____

 We have a wide range of machines for cartoning such items as cough drops, candy, tooth-paste, soap, razor blades, etc.

\star weighing and filling

Illustrated at right is our latest development in this line, our model in bond automatic gross weight packing machine.

This machine is fully automatic, which makes it a great advance in packing powdered materials as all previous Packers have been semi-automatic. Besides being a Packer-Weigher, this model can be equipped as a Volume Packer, Volume Filler and Gross Weigher. Will handle powdered, granular and paste materials.



Also other models, semi and fully automatic, for gross weighing and packing and net weighing, besides carton forming, lining, sealing and wrapping machines, thus providing for complete packaging lines, or individual units to suit customer's requirements. We are always interested in working out your packaging problems. If you will send us details, we will gladly and without obligation submit our recommendation of machines to suit your job.

UNITED STATES AUTOMATIC BOX MACHINERY CO., INC.

Owning and Operating: NATIONAL PACKAGING MACHINERY CO. — CARTONING MACHINERY CORP.

18 ARBORETUM ROAD (ROSLINDALE), BOSTON, MASS. Branch Offices: NEW YORK, CHICAGO

Box and bag stapling equipment

HE use of stapling, as a means of closure for bags and boxes, has shown a great development during the past few years, furthered by the wide variety of stapling equipment that has been produced to meet specific requirements. Bag sealing with staples has grown from a spare time job of retail clerks until whole departments are now devoted to this particular operation. Whereas hand operated machines were used, and still are, power-driven staplers and stitchers are effecting great savings in the packing and shipping departments themselves.

Among the advantages of stapling as a method of closure is the fact that it is neat, secure and very fast. It does not impair the appearance of the container and the container may be used immediately, without waiting for an adhesive to set. Dampness does not cause the seal to loosen, with the danger of the contents spilling out and it is practically impossible to remove the staple and again seal the package without detection, thus reducing the danger of pilferage to a minimum.

Four types of closure are generally used in this bag sealing work. The simplest form is where the bag is merely folded over at the top and fastened with one or two staples. Another method is the use of a cardboard bag top which folds over the top of the bag and is

stapled through the bag, thus making a seal and furnishing a label at the same time. Where the bag is to be folded tightly over the contents, as in the case of a coffee bag, sometimes the two sides are folded in first and then the back and front folds lapped over each other and stapled with a single staple. When a non-sift seal is desired, a wide fold is made across the top of the bag and this fold is folded again, the sides being folded under at the same time. By inserting a stapling machine under the two ends of this fold successively and driving a staple in each end, a flat top, non-sift bag is produced.

Packers of asphalt, fertilizer and other heavy bulk products, who use multiwall paper bags, have discovered that stapling is an efficient and economical means of sealing these bags, too, and bags up to 100 lbs. capacity are handled easily and quickly on equipment especially designed for this purpose.

A very recent development in packaging is the heavy kraft shipping bag, which is used as a shipping container for coffee and other items, carrying 12 or 24 I-lb. bags. This container is especially adapted to motor transportation and is widely used by packers operating their own fleet of trucks. When filled, the sides of these bags are folded in and the back and front are then folded over

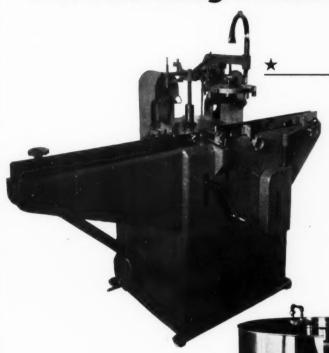
1. Hand stapler for applying white linen labels to burlap bags. 2. Multiwall paper bags sealed by an automatic stapling device where the tops of the paper bags are headed with a cardboard reinforcement. Photos Bostitch, Inc.





PACKAGING CATALOG

LAKSO MACHINES... For the Drug Industry



Automatic Cottoner for Tablet Bottles

Full automatic machine for inserting cotton into bottles filled with tablets. Built in feed and discharge conveyor, variable speed up to 60 per minute. Adjustable for bottle height (4" range) and automatic cotton control for spaced bottles. Single ½ H.P. motor.

Automatic_____ Ampoule Washer

Designed to wash small mouth ampoules of from 1 to 10 c. c. range. Each ampoule subjected to 44 second washing cycle composed of water, steam, air and distilled water at rate of 60 ampules per minute.

THESE MACHINES CUSTOM
BUILT TO ORDER BY

The Lakso Company

SPECIAL PRODUCTION EQUIPMENT

P. O. BOX 257

FITCHBURG, MASS.







3. Hand stapler as used for sealing corrugated boxes. 4. Stitcher with anvil for sealing coffee bags. Courtesy Bostitch, Inc. 5. Special type of stitcher for the closing of heavy duty multiwall paper bags. Photo Acme Steel Co.

each other and stapled with a hand operated or foot operated machine, depending upon the preference and needs of the packager.

Users of corrugated containers have widely adopted stapling methods. Foot or motor operated bottom staplers and stitchers are used to seal the bottom flaps, while specially designed top staplers and stitchers are used on the tops. Some of these top staplers make use of a sealing blade which is inserted under the flap and a more modern development is a top sealing stapler which is operated from the outside of the closed container, closing its staple entirely from the outside and requiring the insertion of no sealing blade.

The smallest machines used for bag stapling can be operated in the palm of the hand. There are heavy duty hand models of larger size, as well as a wide range of foot and motor driven machines all the way up to large automatic box stitchers. Complete information is available in the industry and it is an easy matter for the user to obtain the equipment that is exactly suited to the requirements of his particular work.

One of the widest uses of stapling in recent years has been in carding for display. Items of merchandise that are too small to possess sufficient attention power or to carry adequate sales information are stapled to cards which present the message to the consumer. Such cards serve to identify the brand and the manufacturer, to convey a selling message that the article itself is too small to carry and the sales person too busy to tell, to carry directions and explanations that insure the proper use and care of the product, to advertise other items made by the same manufacturer, and to discourage pilferage, in the retail stores, from counter displays.

Practically any item that can be embraced by a staple can be carded in this way. Bottles or other fragile merchandise can be safely and quickly handled, because the pressure of the stapling machine can be accurately controlled without variation and the staple can be firmly clinched with no appreciable pressure whatever on the object being enclosed.

Speed is a big factor in stapling. Whether operated by hand, foot or electric motor, the stapling machine clicks out the staples as fast as the operator can handle the work. Every click completes a stapling operation. It is much faster for most kinds of bagging and carding than tacking, riveting, gluing, hinging, sewing, hooking and taping operations—operations which involve materials of all kinds. There is no waiting for an adhesive to set and the staple will hold regardless of temperature or moisture. Furthermore, stapling machines are portable and can be placed wherever most convenient for the work in hand. For example, in retail stores, where pre-packaging is to be done by clerks in odd moments, hand operated machines are used on each counter where the work is handled. Manufacturers and distributors can better concentrate their work and more often use foot or motor driven machines for both packaging and display.

The automatic-feed staple-hammer is also widely employed in packaging and shipping operations. Driving a staple like a double-pointed tack, with each single blow, this hammer is an efficient time saver.

On large production, wire stitchers instead of staplers are often used. A stitcher, in the parlance of the industry, is a machine which makes its own staples from a coil or spool of wire. Each operation of the stitcherhead drives a staple and forms another one, ready for the next stroke. Newer types of stitchers are portable and can be easily placed wherever most convenient for the work on hand.

PNEUMATIC'S "Start to Finish" BOTTLING SERVICE for BOTTLES - CANS - JARS

Pneumatic is the one machine builder offering a full line of cleaning, filling, capping and labeling machines designed to operate as individual units or in complete co-ordinated hook-ups.

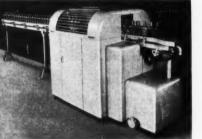
CLEANING



Pneumatic's Inverted Air Cleaners assure thorough cleaning of new glassware. Containers while inverted are subjected to a blast of clean, dry air which completely removes all foreign matter.

At Left-SEMI-AUTOMATIC INVERTED BOTTLE AIR CLEANER: Attendant holds containers simultaneously and in one motion inverts them, thrusting the necks in the direction of the self-centering nozzle seal, where the air blast is received. Machine will handle a wide variety of bottle shapes and sizes at speeds ranging from 20 to 50 per minute.

At Right — AUTOMATIC INVERTED BOTTLE AIR CLEANER: A fully automatic machine similar in operat-ing principle to the Seminatic Cleaner. Will handle 3 oz. to 39 oz. bottles, jars or jugs at speeds up to 120 per minute.



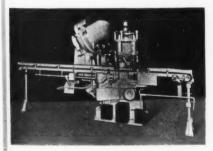
CAPPING

The flexibility of Pneumatic's Single-Head, Two-Head and Four-Head

capping machine models makes handling of a wide size range entirely practical and relatively simple.

At Right-SINGLE HEAD CAPPER: Will sort, feed and apply any type of molded or metal turn-on closure to containers ranging from 1 oz. to 1 gt. at speeds up to 50 per minute. Machine is entirely automatic and requires less than 15 minutes for size

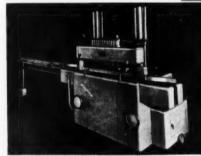




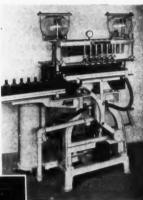
At Left-PNEU ROTARY CAP-PER: A hi speed capping mach for handling a variety of sizes and shapes of bottles, cans, and jars at speeds up to 120 per minute

Illustrated are two of Pneumatic's several vacuum filling machine models for accurate filling of bottles, jugs, cans, and jars at speeds ranging from 20 to 120 per minute.

At Right-SAMCO JUNIOR VACUUM FILLER: For free-flowing or semi-free-flowing liquids in 1 oz. to 1 gal. cans, regular finish or AGST glasswa Parts change takes less than 15 minutes, therefore machine is particularly suited for short runs on a variety of products and container sizes at speeds up



FILLING



At Left—AUTOMATIC SAM-CO VACUUM FILLER: Equip-ped with standard 12-heads this fully automatic machine is capable of speeds of 50/70 per minute on 1 oz. to 1 qt. sizes. Double bowl overflow system, high speed filling nozzles and quick size changes insure rapid dripless filling of free

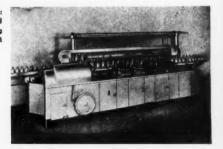
Pneumatic's Simplex and Duplex Labelers safeguard the appearance of your con-

LABELING tainers by assuring precise, accurate register-dependable labeling at speeds up to 120 per minute.



At Left-SIMPLEX LABELER: One of several models for applying front only, front and back, two front and one back, or partial wraparound labels to bottles, cans, and iars. Machine is fully automatic to another in less than 10 minutes.

At Right-DUPLEX LABELER: Will apply front only, or front and back labels to containers ranging in size from ½ pt. to quarts at speeds up to 120 per minute.





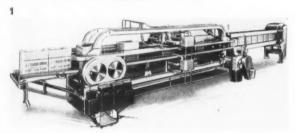
PNEUMATIC SCALE CORP., LTD., 77 Newport Ave., North Quincy, Mass.

Case packing and sealing machinery

ASE packing equipment for can packing consists essentially of a series of inclined runways which receive and gather cans as they roll off the conveyor lines, until the proper number of cans have been assembled to fill one layer in the shipping container. The cans are then pushed, horizontally, into the container by a hand or electrically operated device. If the container is of a type to accept more than one layer of cans, this operation is repeated a sufficient number of times.

Bottle casing units work on a similar principle, but use a vertical drop, rather than a horizontal push, to effect entry of the packages into the shipping container. Bottles come off the conveyor lines and are gathered over a grid which correctly positions them. At the proper moment, and under the control of the operator, the bottles drop into the shipping container which has been automatically raised until it rests just under the grid.

Carton packers have also been developed, working on principles very similar to those of the can packer with the exception that the rolling action of the can is replaced by a pushing action to get the various rectangular cartons into the proper position before placing the cans, en masse, into the shipping container.





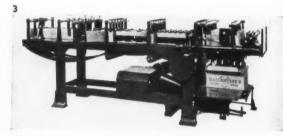


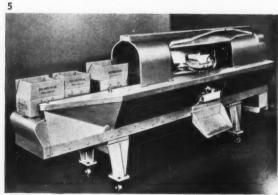
Once packages have been packed—by hand or by machine—it becomes necessary to seal them firmly for shipment. The simplest devices for this purpose are the hand glue sealers, which are simply adjustable pressure units mounted on top of roller conveyor sections through which the hand glued cases are passed.

Case gluing and sealing units of an automatic type receive filled, but unglued cases directly from the conveyor line and apply adhesives to both the top and bottom flaps of the cartons with the goods already packed therein. They then fold the flaps into closed position and pass the sealed containers through a compression unit, where the glue sets. Speeds of from 200 to 1,200 cases per hour are practical on such automatic equipment. Such machines may be equipped to seal and glue top flaps only, as in the case of shipping containers for bottled goods which have previously been used to carry the bottles from the glass plant to the packaging plant.

The machines are completely automatic, require no operators and are adjusted to start in motion whenever a case is presented to the machine by the conveyor line. Many machines are equipped with photo-electric cell devices to prevent jamming of cases.

Automatic top and bottom case sealer. Photo J. L. Ferguson Co. 2. Packer and sealer handling beer cans and cases. Photo Standard-Knapp Corp. 3. Case loader for beer bottles. Bottles come off the conveyor lines and are gathered over a grid which positions them. Photo Standard-Knapp Corp. 4. Case loader for can packing. Photo Burt Machine Co. 5. Automatic case opener and erector. Photo J. L. Ferguson Co.





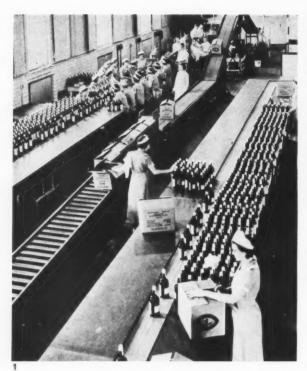
Cut PACKAGING Cost

We have helped others reduce their packaging cost through the designing of special machinery to meet their needs.

We build wrapping and packaging equipment for the irregular and difficult-to-handle products.

Write us, outlining your packaging needs and we will give your problem our serious consideration and submit to you our recommendations, without any obligation.

RICHARD
MACHINE
COMPANY
BATTLE CREEK, Michigan





1. Inclined and level belt conveyors, stainless steel work tables and gravity roller conveyor used in cartoning of bonded liquor. Photo Mathews Conveyor Co. 2. Spiral chute lowering filled cartons of coffee to roller conveyors in basement which, in turn, carry the cartons to the storage room. Photo Standard Conveyor Co

Materials handling equipment

ONVEYING equipment is the basic part of the high speed, mass-production process increasingly being called into use to step up defense needs. It is of vital importance in cutting handling time, avoiding wasteful waiting for materials and increasing plant capacity. Installed at strategic points in a production system, conveyor equipment handles incoming material, moves work in process and delivers goods to shipping and storage, thus helping hundreds of manufacturers to make man-power and man-hours more productive.

In mechanized materials-handling—as in processing and packaging operations—there is a one best way for doing every operation and a most effective method of combining operations in a smooth sequence. These call for two distinct but smoothly meshing mechanical systems or, considered in its broadest aspect, of two separate parts of a single mechanized-handling system.

First: the mechanical means used for moving the goods and for insuring a continuous, automatic flow of all ingredients, bottles, boxes, and cartons from the receiving dock, on through the plant and out to the shipping dock again.

Second: the mechanical means by which the progress of this flow is so directed and supervised that component parts meet at designated times and places; the materials from each feeder line joining those from every other feeder line and moving along to stock room or shipping dock, as a single flow.

Experience in thousands of plants has proved that one of the best ways to obtain continuous flow movement is by combinations of conveyor lines so varied in type as to meet the necessary changes in flow direction; such as horizontal, grade, radius, vertical ascent, vertical descent, two-way, overhead or floor; and changes in form of materials moved; such as raw ingredients, semi-processed ingredients, bottles, bags, boxes, cartons or cases.

Likewise experience has proved that one of the most effective methods of coordinating and synchronizing these conveyor lines is by means of pneumatic dispatch tubes with a central terminal in the planning department, manufacturing office or laboratory, and tube stations at various points where one operation blends into another.

These two integrated systems—or parts of a system—



LAMSON CORPORATION

1003 Lamson St., Syracuse, N. Y.



Manufacturers of Package Conveyor Systems and Pneumatic Dispatch Tubes Sales and Service Offices

PHILADELPHIA WASHINGTON BOSTON NEW YORK BALTIMORE ATLANTA Lamson Company Ltd., TORONTO, CANADA

DETROIT CHICAGO PITTSBURGH

CLEVELAND INDIANAPOLIS MINNEAPOLIS KANSAS CITY HOUSTON ST. LOUIS DALLAS SAN FRANCISCO Representatives in MEXICO, ARGENTINA, VENEZUELA and CHILE

Los Angeles SEATTLE

• Service to Industry Amost every industry today is benefiting from the use of Lamson Conveyors and Lamson Pneumatic Dispath Tubes — particularly the packaging industries. For here, the services rendered by Lamson equipment — fast, economical handling of large volumes of materials, together with complete coordination of every manufacturing and processing step - are in many instances absolutely essential to the successful operation of the business.

Field notes and design data accumulated in thousands of plants during more than half a century give Lamson engineers a practical insight into the special needs of packaging industries. This wide background has resulted in the ability to design coordinated control systems aimed at welding men, management and machines into a more closely-knit organization—an organization that yields faster, smoother production at lower unit, process and obsolescence cost.

Engineering and Design Factory-trained Lamson resident engineers are always available for free consultation. They are frequently able to solve problems by suggesting slight changes in or small additions to existing equipment. Rarely is it necessary to design special conveyors. However, where this is the case, a large staff of designers and research men is at your command

For information on new installations or revision of present systems, telephone the Lamson representative in your city, or write direct to the home office in Syracuse, N. Y.



Butler Bros., Minneapolis, large



Loblaw's Syracuse. Tubes speed orders in office and warehouse.







Coca-Cola Co., Syracuse, uses Lamson Roller Gravity for live



Pepsi-Cola Co., Long Island City, showing Lamson Boosters in ac-



ican Chicle Co., Long Island speed orders with Lamson



Atlantic & Pacific Tea Co., ware house, Flint. Note Lamson over



Ontario Biscuit Co., Buffalo. Lam-son Beit Conveyors eliminate all trucking.



ernsey Island, Syracuse. Note use of Gravity Roller and 2-Plane Chain Conveyors.

Conveyors

Roller Gravity Conveyors

Made in a wide range of sizes, with rolls from 1/8" to 2%" in diameter, and with a capacity from 50 lbs. to 1000 lbs. The channel form frame provides greater strength, improved appearance and eliminates the need for extra guard rails.

Live Roll Conveyors

A roller conveyor in which a rubber covered cable is used to turn the rolls and move the load. Permits a complete system to be operated on one level. Used also for inclines or declines.

Booster Conveyors

Commonly used as a grade retriever for gravity conveyors, or as continuous flow conveyors from floor to floor in an up or down flow. Adapted to handling cases, cartons and boxes.

Overhead Conveyors

Adapted to installations where various changes in the direction

of flow-vertically or horizontally-are necessary. Puts the ceiling to work saving floor space for production.

Belt Conveyors

Furnished in two types: (1) Uniplate, in which belt slides over a slider plate. (2) Uniframe. in which a belt moves over rolls similar to a Lamson roller gravity conveyor. Supplied in widths from'3" to 48".

Slat Conveyors

Power driven conveyors adapted to the moving of heavy crate loads and box-type loads.

Vertical Conveyors

Permit an up and down movement in limited space. Furnished in both the continuous flow and reciprocating types. Supplied for a wide range of uses from the simple, light duty lifts up to heavy duty units.

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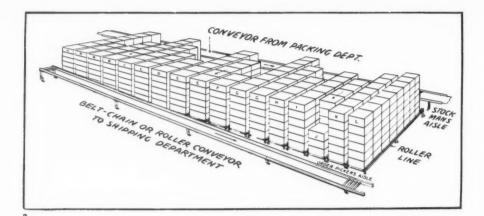
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3. This basic principle of stock storage eliminates trucking and handling aisles between piles; increases storage capacity and makes supervision and inventory control easy. Sketch Lamson Corp.

not only mesh smoothly and accurately in their own operation, but they provide an effective method for getting practicable standards of "unit-time" performance per man and per machine. They are an effective method for establishing a routine of preparation, operation, and control that will insure constant maintenance of the conditions under which work standards are set up. And they are effective for working out such mechanisms as routing, order-of-work, instruction cards, purchase of materials according to use, maintenance of limits in central stores and the controlled conditioning and delivery of materials, tools, containers and the like.

A large wholesale drug company installed a combination gravity roller conveyor and belt conveyor to handle their merchandise, and a pneumatic tube system for dispatching papers throughout the plant. A central desk was installed on the second floor, right in the heart of their order-filling, invoice-making, item-pricing clerical department. This efficient tube system and one employee have taken the place of ten boys who, before the system was installed, ran around the plant delivering the papers to various departments or individuals, causing a great deal of confusion.

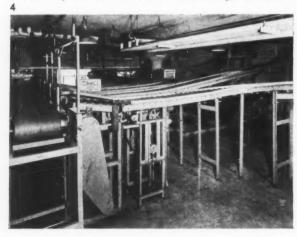
The roller and belt conveyor system has increased the volume of this drug plant 50 per cent over what it was

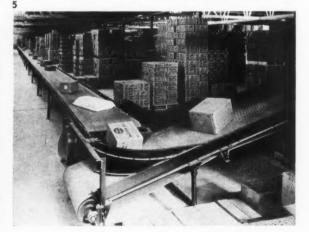
before they adopted mechanical devices for speeding up their service. The conveyors cost this wholesale drug house \$7800 installed, and the pneumatic tubes \$4200. They now save them \$18,000 or \$20,000 a year which they can trace directly to this combination system. An addition to their present system, which they are now adding, will cost \$1500 and the drug company anticipates it will save double the cost the first year.

Before this wholesale drug house purchased conveyors, they were unable to complete their orders the same day they were received. They were never able to get them all shipped for the freight houses closed at 4:30 P. M., and their average quitting time was 6:30 P. M. Now, on the average, they are through packing by 2:30 P. M., and every order is in the freight house before 4:30 P. M.

Naturally the dispatch-tube part of the system is the simplest. It varies only according to the size and shape of the carriers and tubes required to handle the various papers and records. The conveying systems are most complex. They must meet a much wider range of plant and process conditions, but thanks to modern conveyor engineering which has reduced virtually every handling problem into simple components that can be handled by combining standard types of conveyors little, if any, special designing has to be done in fitting today's con-

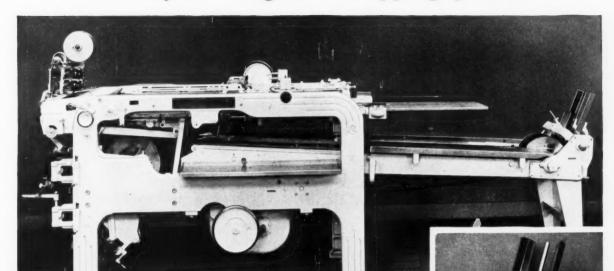
Four live roll conveyors operated at controlled speeds bring cases of filled bottles from the sealers to belt conveyor.
 Junction, level to incline belt. One of eight 200-foot order pickers' belts at loading height. Photos Lamson Corp.





PACKAGING CATALOG

What is your toughest wrapping problem?



See what this new "Oliver" can do for you











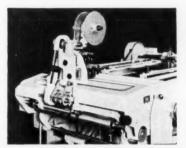
Handles small cartons ... large cartons ... irregular shapes ... open-top boxes

Does that tough wrapping job involve the overwrapping of a small or large carton? An irregularly shaped article requiring a cardboard support or tray? Or does it call for an attractive low-cost label? Maybe short volume items vex you. This full-automatic "Oliver" Wrapper is the solution to all these problems. It neatly wraps rectangular or odd-shaped articles with glassine, waxed, Cellophane or other heat-sealing wrappers.

Besides the features described at right, there are

many other worthwhile advantages. It is easily and quickly set up and adjusted. Straightline operation calls for only one operator—usually a girl. Wrapper tension is instantly adjustable to the nature of the contents. Thermostatic sealing effects an extra strong, air-tight seal (preventing dehydration).

Plus features include high grade grease-sealed ball bearings and precision construction...insuring years of quiet, dependable service. Automatic Cardboard Folder and Feeder—just what you need for articles requiring cardboard supports or trays. It automatically folds scored cardboards and feeds them (or flat cardboards) in front of each flight bar of the package conveyor. Soon pays for itself.



Automatic Roll Type Labeler heatseals attractive die-cut labels in almost any position on the package. Uses rolls of labels—very economical and convenient. If desired the labels can be automatically coded as they are applied.

Write for Complete Information

OLIVER MACHINERY COMPANY

GRAND RAPIDS, MICHIGAN



saves Time . . saves Labor . . . saves Materials

PACKAGING CATALOG





6. Reversible slat conveyor handles all types of loads to packing and shipping departments. 7. Overhead chain conveyor in warehouse used to carry cartons of paint to and from storage and to loading dock. Photos Lamson Corp.

veyors to conditions in the modern packaging plant.

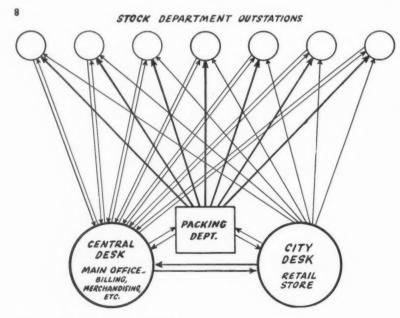
Types of conveyors

The standard conveyors break down into eight classifications. They are as follows:

Gravity roller conveyors: Using only gravity as motive power, these conveyors consist of a series of freeturning rollers mounted in a rigid frame. The rolls are made in various sizes to accommodate various loads, and they are light enough so that even empty cardboard boxes will overcome the inertia of the roll tube and the roller bearings.

Gravity chutes: Made of structural steel and sheet metal, these chutes confine the load and reduce the speed of short travel from an upper to a lower level. Spiral chutes are used for longer drops and in places where space is limited. Some spirals have gravity roller sections, and some even are operated by power.

Live roll conveyors: Similar to the gravity roller conveyor, this type employs mechanical means to power the rolls. Power belts are snubbed against the under side of the rolls under tension supplied by snubbing rolls and sheaves located between the carrying rolls. Flat belts are used for straight travel, and round belts for curving travel. Chain types driving through sprockets on the rolls are also employed. Roller spirals, as mentioned above, can be powered with round-type belts, thus enabling continuous flow down declines of loads of varying weights, with no danger that fragile loads will be crushed between heavy loads. Loads also can be elevated in this manner without necessity of transfer from a horizontal to a vertical conveyor.



8. A simple pneumatic tube system facilitates exchange of correspondence, orders, stock requests, shipping notices, etc. Sketch Lamson Corp.

536 PACKAGING CATALOG

HELMOLD'S REES. J. F. HELMOLD & BRO., INC.

1462 SHAKESPEARE AVE.

CHICAGO, ILL.

BENDERS CUTTERS. BRANCE

Belt conveyors: The belt conveyor is perhaps the best known type of power conveyor. Frequently, rollers are used for the intermediate sections between the end pulleys, but a more modern and usually more economical intermediate is the "slider" type. Ordinarily the bottom and side guards are formed of one piece of sheet metal. The belting slides in this trough. The slider type of intermediate is confined to comparatively light loads weighing 50 lbs. per square foot or less, because of increased friction and wear when heavy loads are conveyed.

Booster conveyors: Belts are often installed to convey loads up or down inclines. Cleats may be fastened in the belting, the maximum angle of incline being governed by the stability of the loads. Cleats present a real problem, however, in transferring loads from conveyor to conveyor. To overcome this objection, belting with special non-skid surfaces is used. Angles of incline are then limited by the non-skid effect of the belting on the load being conveyed.

Chain slat conveyors: This type of conveyor consists of two strands of chain with slats fastened to attachments on the links of chain. It is used in place of belt conveyors when either the weight or the character of the load would damage the belting.

Overhead chain conveyors: In this type of conveyor the chain is supported from trolleys which operate in or on overhead steel track. Means for attaching the load to the chain are provided and may be in the form of

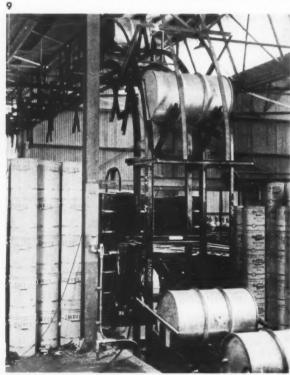
hooks or carriers. The conveyor dips when necessary to bring the load down to a working height for removal at an operation or for performance of an operation while the load is on the conveyor. In this way the floor between operations is kept clear of obstructions.

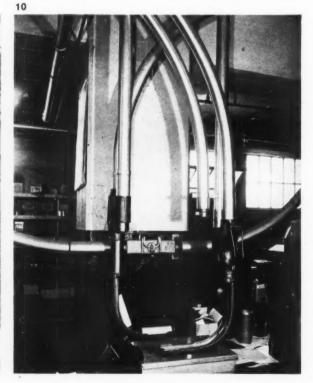
Vertical conveyors: There are several types of vertical conveyors. The reciprocating type consists of a car suspended by chain or cable over a sprocket or sheave with a counterweight suspended at the other end. The load is usually automatically conveyed to and from the car, while the travel of the car in the shaft is controlled by limit switches.

Continuous vertical chain conveyors consist of one or two strands of chain with cars suspended from the chain. The cars are finger type that comb through corresponding finger type loading and unloading stations to effect automatic loading and unloading. This type of conveyor permits continuous loading at one level and unloading at another level at much higher rates than are possible with the reciprocating type of vertical conveyor. Vertical chain conveyors can also be made to give fully intercommunicating service to several floors. With this type of conveyor loads at any floor may be dispatched to any other floor.

Conveyor engineers have helped hundreds of manufacturers to make man-power and man-hours more productive by planned material handling, by saving valuable time, using plant space more effectively, and by releasing man-power for more productive work.

9. Continuous chain conveyor for elevating and lowering oil drums. Photo Standard Conveyor Co. 10. Dispatch tubes serve to keep office, production, packing, and shipping departments within easy reach at all times. Photo Lamson Corp.





PACKAGING CATALOG

Lubrication of packaging machinery

by John B. Tuttle

IGH speed and intricacy characterize modern packaging machinery. These terms typify weighing, filling, wrapping, labeling, sealing, and cartoning units. The complicated mechanism of each performs a myriad of packaging functions at the highest possible output speed compatible with quality production. The machine elements in each unit present literally hundreds of metal to metal contacts which must be separated with a lubricant to avoid excessive wear and insure long operative life. Modern petroleum technology provides lubricants exactly suited for such applications.

In its simplest terms the lubrication of packaging machinery is the same as other high speed, complex mechanisms. The correct lubricant must be selected and properly applied at regular intervals. The second part of the problem is largely up to the machine operator, once the selection is made. While many operators are also able to make the selection, it is generally recommended that a lubrication engineer of a reputable oil company be consulted in the matter.

Choosing the correct lubricant includes consideration of all the factors which affect its performance. To the uninitiated these may seem fewer in number than is really the case. For example, in lubricating a given group of packaging machines an engineer may have to consider any or all of the following: the machine element involved-gears, bearings, cams, slides, etc.-the temperature of the moving parts, the load and load variation, the speed and speed variation, operating clearances, whether parts are open or enclosed, atmospheric conditions, importance of leakage, contaminants such as the material being packaged or glue, etc., and the method which can be used to apply the lubricant. In food handling equipment there may also be government or municipal regulations covering the quality of the lubricant used. All these factors must be weighed as to relative importance and the lubricant chosen whose proper use will most nearly satisfy all of them. Occasionally this may have to be a compromise, but the time spent will pay dividends in freedom from shut-downs and repair expense.

A lubricant usually performs two functions. It prevents contact of metal surfaces, substituting low internal friction of the lubricant itself for the high friction of the metal. It also serves as a means of dissipating frictional heat by conduction. These two functions dictate in a general way the nature of the lubricant and its physical character. High speed spindles are best lubricated with a light bodied oil; the higher the speed, the lighter the oil used. Light bodied oils have low internal friction and are good heat conductors. Also they flow freely at all temperatures, insuring a constant lubricating film on the rapidly moving parts of the machinery.

Slow moving elements may require viscous or semisolid lubricants. Their slow speed causes less frictional heat and maintenance of a lubricating film is of greater importance. The greater density of the heavier oils enables them to cling to the element surface, preventing damaging metal contact. Also, their cohesive nature limits the amount of the lubricant which will be thrown off, reducing the frequency of application.

Petroleum lubricants for packaging machinery are of two general types—oils and greases. Oils vary in viscosity or body density from light spindle oils to heavy cylinder oils; for example, in enclosed gear drives. Greases are oils of different viscosities which have been rendered solid or semi-solid through the addition of soap or other thickening agents.

The soaps used are usually calcium, sodium, or aluminum each imparting certain special characteristics to the grease prepared with them. Calcium or lime soap greases resist water but are somewhat less stable under high speed operating conditions than soda soap greases. For this reason calcium soap greases are usually chosen for bottle filling or canning machinery where water inevitably reaches the bearing surfaces. Likewise soda soap greases are usually recommended for high speed antifriction bearings or bearings subjected to high operating temperatures caused by radiant heat.

Aluminum soap greases have less water resistance than calcium base products but possess high cohesive power. They are usually applied to parts subjected to intermittent or throwing motion where they must adhere firmly to the metal surface. All these grease types are available in different consistencies and correct selection involves considering both the composition and the physical form of the lubricant.

Most packaging machine bearings are of two types—anti-friction or plain journal bearings. The anti-friction bearings are of the ball or roller type and most frequently are grease lubricated. They usually operate at fairly high speed and should require lubrication at infrequent intervals if the grease has been correctly chosen and is not washed from the bearing by water or other contaminants. Most anti-friction bearing manufacturers prefer the soda type lubricant since it exhibits better stability in service. However, soda base greases cannot be used in moist or wet conditions and calcium or aluminum greases must be applied. Examples of such conditions are canneries and dairies.

The grease is usually applied to the bearing with a grease gun of appropriate size which is filled directly from the shipping container of grease. Caution in using the gun should avoid excessive use of grease. Many precision bearings may be harmed as much by excess grease

as by too little. If the grease is packed into the bearing under pressure the friction between the rotating element and the grease may cause overheating and seizure. Many bearings are designed with vents to prevent this, but if they are not evident care should be taken to avoid overlubrication.

Many plain bearings on packaging machines are also lubricated with grease. These include journal bearings which are not easily accessible, bearings which require infrequent lubrication due to slow speed or low load, and elements such as cams, slides, etc., on which a film of oil cannot be maintained easily. The grease is usually applied either by a grease gun or through a screw-down cup. Gun application usually involves applying enough grease to force some out of the ends of the bearing. This tends to flush out any contaminating abrasive present and insures a complete grease film within the bearing. Screw-down cups are filled at regular intervals by removing the cap and filling the recess level full with grease. Bearing lubrication is accomplished by turning the cup down a few turns at each lubricating interval until the grease has been used. Spring loaded cups are available if the grease must be applied by constant pressure.

Oils are usually applied by hand can, drip oiler, wick, or mechanical feed system. The drip oiler has a reservoir which feeds oil slowly by gravity while the bearing operates. Wick feed depends on the capillary climb of the oil to replace that wiped from the wick surface in contact with the moving element. Mechanical systems are synchronized with the machine motion and deliver a measured amount of oil at regular intervals. Satisfactory operation of any of these requires systematic examination to determine their condition and, of course, the selection of both oiler and lubricant fitted for a given machine element.

Spattering and dripping of the lubricant is a disadvantage on almost all packaging units. The oil may reach the contents of the package, spoiling it; it may damage the appearance of the container and cause excessive

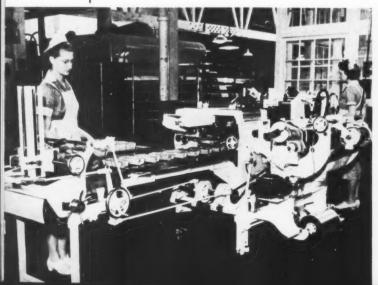
lubricant expense. Aware of this, the petroleum technologist has developed the so-called semi-fluid or clinging type oil lubricant. These products are semi-fluid in consistency and contain additives to improve both their cohesive and adhesive properties. These are of special interest for use on cams and other intermittent motion units which tend to fling the lubricant from their surfaces. They are usually light in color and solve many difficult lubricating problems.

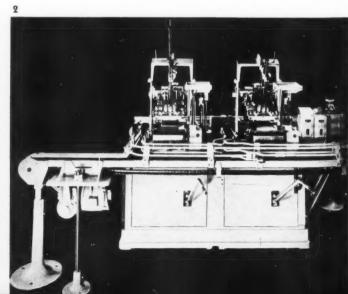
In packaging foodstuffs and such items as cigars, cigarettes, and pharmaceuticals, it is usually desirable to use a lubricant which is not deleterious to human health should it inadvertently reach the packaged material. The petroleum industry meets this need with both oils and grease-like materials—petrolatums which are U. S. P. in quality. These are entirely satisfactory as lubricants and their refinement permits internal use without ill effect.

Having selected the proper lubricant and arranged its systematic correct application, there remains the problem of storage. The petroleum manufacturer realizes that modern high speed units are frequently machined with a precision formerly accorded only to fine measuring instruments. Maintenance of these surfaces is vital to their operation and they may be easily spoiled by only slight contamination of the lubricant. He therefore cleans shipping containers with care and repeatedly filters each lubricant as it is packed. All this is valueless in terms of machine protection if the machine operator does not observe equal care in storing and using the material.

Barrels and cans should be stored so they are easily accessible but as free as possible from atmospheric contamination. Each should be clearly marked and preferably always stored in the same place. Habit is a good guard against misapplication only if the lubricant is always in the same location. Barrels should be fitted to suit filling the type of small container used which should have some regular storage space. System in lubrication is difficult only until one gets used to it.

1. On automatic wrapping machinery which handles food products, special non-injurious lubricants must be used to avoid any possible hurt to the consumer. Photo Battle Creek Bread Wrapping Machine Co. 2. A modern labeling machine is one of the packaging mechanisms which requires careful lubrication to eliminate frictional drag and wear, and to dissipate heat which is caused by high-speed operation of the machinery. Photo Economic Machinery Co.







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Shipping methods and considerations

by J. D. Malcolmson

HILE this title is broad enough to serve for a series of books, the following remarks are only intended to summarize the situation and to direct the reader to sources of more detailed information. Many of these subjects are also covered separately in this edition of the Packaging Catalog.

Shipping agencies in the United States include rail (freight, express, baggage and parcel post), trucks, ships and airplanes. While airplane shipments of freight are new and very small proportionately, the end of the war will undoubtedly leave thousands of planes looking for new uses and scores of plane factories looking for new outlets. One logical peacetime outlet is air freight and we are destined to see great progress here in the years to come. It therefore behooves shippers to start thinking about strong lightweight containers adaptable to airplane shipments.

Today, however, the great bulk of merchandise travels by rail freight and the following considerations are, therefore, directed chiefly to this method, remembering that trucks and, to a lesser extent, other methods of transportation follow similar general principles. Our interest here, therefore, is in freight and particularly in the methods of packaging merchandise for LCL freight since many C/L shipments are bulk while most LCL shipments are packaged.

Modern industry has made almost a science of producing the right shipping container and method for each particular product, so that today a shipper has a vast fund of information to draw upon provided he knows where this is and also has a clear idea of what he needs. Some of these sources are indicated in the bibliography at the end of this article.

Official container regulations

To play any game properly, it is first necessary to know the rules. These rules on shipping methods are quite complicated in the aggregate, but become simpler when properly broken down. Although we can touch only the high points here, it is well to consider the most important ones, which are:

Consolidated Freight Classification Rules 5, 40, 41. Motor Truck Classification (interstate and common carriers).

Official Express Classification Rule 18.

Bureau of Explosives—dangerous articles by freight, express, baggage, motor vehicle (highway), steamship and water (ships).

Parcel Post. Freight Container Bureau (perishables such as fruits and vegetables).

U. S. Government Federal Standards (there are several hundreds of these).

U. S. Treasury Department Regulation No. 6 covering bottled-in-bond spirits.

There are no uniform specifications for trans-ocean shipments.

There are no official airline specifications.

Freight: The freight regulations are fairly complicated at first glance. Thus, it is first necessary to look up your product under the commodity rate tariff of your individual railroad Association (for instance, the New England Freight Association). This is assuming that the shipment would move at commodity rates. However, if it moves under exceptions to the classifications, it is necessary to refer to the "Exceptions to Classification" published by the Associations. If it moves under the classification ratings, it is then necessary to refer to the Consolidated Freight Classification. In other words, commodity rates take precedence over the exceptions and the exceptions, in turn, take precedence over the classification. The above is necessarily a very brief and general description of one of the most complicated subjects that a traffic manager has to become familiar with.

Actually the Consolidated Freight Classification is the reference in most use as this large volume lists each commodity giving in most instances the form of container to be used. These containers in turn are described in detail in Rules 40 and 41 at the end of the book and also under the special container descriptions printed on the blue colored pages pear the end of the book.

colored pages near the end of the book.

The Consolidated Classification book may be consulted at 143 Liberty Street, New York, or it may be secured by subscription from the Consolidated Classification Committee, Union Station, Chicago. The subscription rate is \$2.50 per annum and includes all supplements.

Motor trucks: This form of transportation has now become so popular that there are several classification books available, the principal one being the "National Motor Freight Classification" published at 1013 Sixteenth Street, Washington, D. C. This also lists the various commodities and states how they should be packed, for instance "bags, boxes, barrels," etc., but does not require that these containers conform to any detailed specification. A movement is now under way to bring these containers into line with the present freight specifications.

Bureau of explosives: The shipment of all dangerous articles comes under the control of the Bureau of Explosives, 30 Vesey Street, New York, and their published regulations take precedence over the standard freight, express and other requirements. These regulations apply on all methods of transportation and a copy may be secured on application. The Bureau of Explosives is a division of the Interstate Commerce Commission whereas the Classification Committees are not Federal, but are merely representatives of all the railroads of the country.

These Bureau of Explosives regulations cover inflammable materials, explosives, fireworks, poisons and other dangerous articles. In many cases special requirements must be complied with when packing this type of merchandise, such as the use of labels and special printing copy. Because of the dangerous nature of this merchandise, the Bureau has to impose stricter requirements than

in the case of ordinary freight and has to be very efficient in policing and enforcing these rules. As a result, however, the transportation systems of this country have an enviable reputation for the safe handling of explosives and other dangerous articles running back over a period of a great many years

of a great many years.

Parcel post: The Post Office Department does not issue detailed packing specifications, although they do maintain a "Classification Department" at the New York City General Post Office. Rules may be studied by consulting the Postal Regulations or specific pamphlets available at all post offices. In case of doubt, submit your proposed package to your local postmaster. Parcel post packages must not exceed 70 lbs. in weight nor 100 in. in length and girth combined which is equivalent to

Perishables: In July 1935, the Freight Container Bureau was given full jurisdiction over all containers carrying fresh fruits and vegetables. The Bureau not only issues its own dockets and specifications, but also designs containers, writes specifications and assists in developing new packages or in trying them out on official test shipments. These regulations take precedence over the freight classification.

U. S. Government specifications: Until recently each branch of the Federal Government maintained an independent set of container specifications. This confusion was largely eliminated a few years ago by the establishment of the "Federal Specifications." However, the Army, Navy, Marine Corps and others still keep many of their own specifications in force. For instance, the Army publishes an "Index" of specifications covering 250 pages and listing about 6,000 individual items. of these listings carry a coded number such as WW-P-377 which, in turn, refers to a separate pamphlet procurable from the Superintendent of Documents at a cost usually of 5 cents and this pamphlet, under paragraphs G and H, describes the form of shipping container to be used for that particular commodity. Thus, the recipient of a contract for spaghetti, for instance, finds in the Index that this is specification No. N-M-51. He then has to secure this pamphlet which describes in detail just how the spaghetti must be made and paragraphs G and H tell him how it must be packaged and shipped. In some cases these container requirements are specific while in other instances they simply state "commercial containers may be used." In other instances, the reference may be to the general Federal container specifications, some of which are as follows:

Specification LLL-B-631a—corrugated containers. Specification LLL-B-636a—solid fibre containers. Specification NN-B-601—cleated plywood boxes. Specification NN-B-621—nailed and lock corner wooden boxes. Specification NN-B-631—wire bound wooden boxes.

The Treasury Department also has some specifications of its own. One of these is known as "Regulations No. 6" and covers all containers for the shipment of bottled-in-bond spirits and this takes precedence over all other regulations.

Air freight: There are no uniform specifications in force. Export: So far there are no uniform specifications. In normal times the coastwise or Panama Canal boats will accept the same containers as domestic rail freight, but the overseas lines are more strict and require stronger boxes than this. In most cases they also require metal strapping, but they do not have any uniform rules. The best policy here is to submit the package prepared for shipment to the individual line involved and attempt to secure permission in writing to use that type of container.

Canadian requirements: While Canadian regulations are not as voluminous nor as detailed as those in the United States, they follow in general the American specifications very closely. This is especially true for freight. Test shipments: The carriers recognize that constant experimentation is the road to improved containers and reduced damage claims. For that reason, they are very lenient and cooperative in regard to legitimate test shipments of new containers. Sometimes these can be arranged for by conferring with the carrier involved while the Freight Container Bureau and the Freight Classification Committee have definite procedures for carrying out such test shipments. In respect to freight, this procedure is described in detail in Rule 49 which has recently been added to the Consolidated Classification.

Fibre containers

In as much as fibre containers are still relatively new in comparison with wooden boxes, it is necessary to comply with certain legal regulations when using these containers for shipment. The principal regulations are as follows:

Rail freight: The regulations for freight shipment of merchandise in fibre containers are promulgated by the Consolidated Freight Classification representing about 950 participating railroads and coastwise steamship lines. The services of an expert traffic man are required to decide whether a given product comes under the com-modity rate tariff of an individual railroad association, under exceptions to the Classification or under the Classification ratings themselves. In the latter event, the requirements are uniform for all carriers and the detailed specifications covering the use of fibre containers are contained in Rules 5 and 41 of the "Consolidated Freight Classification." This is a book about the size of a telephone directory and may be secured from the Classification Committee, 202 Union Station, Chicago, The subscription charge is \$2.50 per year which includes all supplements. Every shipping man should subscribe to this service as the book not only contains all rules and regulations covering freight shipments and packing specifications for articles in fibre containers, but also lists the individual commodities together with pre-

scribed methods of packing each.

Rule 5 states that "all containers must be such as to afford reasonable and proper protection to contents" and also defines such words as "packages," "bale," "bundles," "boxes," etc. Rule 41 defines "boxes" of various accepted styles and describes how they should be manufactured, sealed, tested and otherwise made ready for shipment. In as much as each of these words has a

very definite meaning, the definitions are shown below. When the item is specified "in boxes," it means that when corrugated and solid fibre boxes are used, they must conform in all respects to the specifications in Rule 41. This includes many patented or infrequently used boxes and the following table from Rule 41, therefore, shows only the boxes in common use and not the unusual styles. This table shows the situation as of Sept. 15, 1941, including the new 20-lb. gross wt. box. This new 20-lb. box only became effective July 17, 1941.

The only other definition of "boxes" is found in the

The only other definition of "boxes" is found in the furniture classification where a box may measure up to 85 in. on 200 test and 100 in. on 275 test.

85 in. on 200 test and 100 in. on 275 test.

The words "bales" or "bundles" mean in reference to corrugated or solid fibre boxes that the weight and dimension limits may be disregarded provided that if the box is oversize or overweight, it must be "securely bound" with metal straps, wire or ropes. Sometimes bales or bundles are charged a premium of 20 per cent over

Fibreboard Boxes in Common Use

		0 111 121			d Corrugated Fibreboard, see Notes 2 and 3		
Maximum Inside Dimensions, Length, Width and Contents (Lb.) (In.)	Solid Fibreboard		Facings		Minimum		
	Minimum Thickness of Board (In.)	Minimum Test per Sq. In. (Lb.)	Minimum Thickness (In.)	Minimum Test per Sq. In. (Lb.)	Test per Sq. In. of Combined Board (Lb.)		
		All Fibre Boxes Not O	therwise Provided for	or Below, see Section 4	ł		
20 40 65 90	40 60 65 70	.045 .060 .080 .100	125 175 200 275	.009 .016 .016 .030	85 100 135	125 175 200 275	
	Two Complete D	ouble-Faced Corrugated	Boxes, One Fitting	Closely Inside the Ot	her, see Section 4		
90	70		•••	.016	85	(Each Box) 175	
		Double-Wall	Corrugated Boxes, s	see Section 4			
65 90	65 70		{	2 Outer .016 1 Center Liner .016	} †85	200 275	
120	100		{	2 Outer .030 1 Center Liner .016	200 100	500	
140	115			3 Liners .030	200	600	

[†] No test required for center liner for 65-lb. box.

the "in boxes" freight rate. The details of this ruling are too lengthy to repeat here but any shipper planning to use bales or bundles should first carefully read and understand Section 3-D of Rule 5 to make sure of using the package which shows the lowest net cost and freight rates as balanced against the cost on an oversize or overweight box.

The term "in packages" is almost as lenient as the term "loose" and means in effect that no packaging requirements are imposed provided the carrier considered the package to be "reasonable and proper protection" under the wording of Rule 5, Section 1. Applied specifically to fibre containers the term "in packages" means that a box or wrapper may be used without regard to style test size weight or sealing methods.

style, test, size, weight or sealing methods.

"Wrapped" is a term usually applied to furniture shipments and means that all finished surfaces and upholstered parts must be protected and wrapped in a choice of indicated materials, one of which is usually fibreboard. No restrictions are imposed regarding the style of the box, its strength or sealing methods. Often creased sheets or semi-boxes are used secured with metal straps.

Occasionally one encounters the term "in cartons—See note" and this usually refers to a specific exception which differs from Rule 41. There are many hundreds of such exceptions so that it is always desirable to look up any new items to make sure of the exact form of packing required.

All fibre containers conforming to the Rule 41 definition of "boxes" must carry a circular boxmaker's certificate. If oversize or other containers not conforming to Rule 41 are permitted, a rectangular certificate is required with the name of the item included such as "Box for Brooms." Packages containing fragile articles or articles in glass or earthenware must be marked "Fragile—Handle With Care" or similar precautionary marks (Rule 6, Section 2).

When used for LCL shipments boxes must either show description of contents or an identifying symbol or number which must be explained on the shipping order and bill of lading (Section 7-B). The bill of lading must also be endorsed, "The fibre boxes used for this shipment

conform to the specifications set forth in the boxmaker's certificate thereon and all other requirements of Rule 41 of the Consolidated Freight Classification' (Section 7-C). Many new users of fibre containers have been puzzled by 20 per cent penalties assessed on the freight charges due to failure to endorse the bill of lading in this manner.

Dangerous articles: In the present connection the expression 'Dangerous Articles' includes explosives, fireworks, ammunition, inflammable materials, corrosive liquids and poisonous substances. The regulations covering the shipment of dangerous articles are issued directly from the Interstate Commerce Commission through the Bureau of Explosives and take precedence over all other freight regulations including every form of transportation. Naturally these regulations are more severe than for ordinary freight and are more rigorously enforced. The reason for this is obvious and in actual practice this strictness has paid big dividends in human safety and material savings.

For instance, in normal years 500,000,000 lbs. of explosives are shipped over our transportation system and for a period extending well over ten years this shipment has resulted in no damages, no injuries and no deaths. The Bureau of Explosives was first created in 1905 and the complete regulations governing shipping containers may be secured in the form of a bound book by applying to the Bureau at 30 Vesey St., New York. From time to time supplements to this book are mailed to subscribers and several times a year a docket is published listing applications for changes which have been requested by shippers or proposed by the docket. Reference to the Bureau of Explosives regulations will also be found in Rule 35 of the Freight Classification.

Effective January 7, 1941, the Bureau of Explosives was greatly simplified so that in place of the many specifications previously applying on fibre containers the new regulations concentrate all of these into one single group known as specification ICC-12B. Other minor specifications are still retained such as 12C and 12E which refer to patented and other seldom used containers. Among the simplifications effected in the new regulations was the elimination of ICC requirements for the shipment of paints, lacquers, etc., by freight (but not

by express) and an increase in the weight limits for exemptions on certain other items. Shippers of dangerous articles should study these new regulations carefully as otherwise they may be using a container more expensive than required. Also the great expansion in national defense means that many industries will be shipping ammunition and other dangerous articles for

the first time.

The Bureau is very strict in regard to its requirements for labels and markings. Certain boxes must carry a distinctive colored paper label. For instance, a red label is used for inflammable liquids and a yellow label for matches. These labels may be purchased from the Bureau or may be printed in the correct color on the container by the boxmaker. In other cases where no label is required the box must be printed, "No label required." This is especially true of freight shipments as most express shipments must carry labels. In addition nearly every item requires certain type matter on the box such as "Handle carefully," "Keep fire away," "This side up" and most often the name of the contents. The bill of lading and shipping order must also be endorsed with certain statements such as reference to label requirements. Cars also in some cases must be placarded. These details are important and overlooking them will lead to annoyance and delays.

Effective March 1, 1935, the Bureau also took charge of shipments of dangerous articles on interstate common carrier motor trucks, which means that all the regulations applying on this merchandise when moved by rail freight must also be complied with for truck shipments. As mentioned in a previous paragraph, this is not the

case on non-dangerous articles.

At about the same time the Bureau also issued regulations covering the transportation of this merchandise on

freight and freight-and-passenger vessels.

Express: Shipments in fibre boxes by express must comply with the regulations of the Official Express Classification and particularly with Rule 18 of that classification. This pamphelt may be secured by application to the Railway Express Agency, Inc., 230 Park Ave., New York. The subscription is free on application and supplements are issued from time to time although only two supplements are in effect at any one Changes are less frequent than in the Freight Classification and are often arranged informally without regular docket hearings. Rule 18 follows the freight Rule 41 very closely but in a more abbreviated form. The principal differences are that on packages weighing 35 lbs. or less a non-conforming box will be accepted unless such package exceeds 50 united in., in which case they must also be crated or "securely wrapped." There are certain exceptions to this rule and these are listed in the Classification.

The other important difference is the fact that all regular express boxes will be accepted up to 90 united in. and the gross weights vary with the strength of the board. Some merchandise will not be accepted by express in fibre containers. This includes mirrors (valued at over \$2.00), statuary and about a dozen other mis-

cellaneous items.

Motor truck: There are today no motor truck regulations covering the strength and construction of fibreboard boxes and theoretically any under test container can be used, in which case the truck would have a decided advantage over the railroad. Discussions are now under way with the object of developing uniform strength regulations for both trucks and rail freight.

Parcel post: The Post Office Department has not issued any blanks order controlled.

issued any blanket order containing specifications for fibre containers. Scattered through their other publications, however, will be found items where corrugated boxes are specifically recommended. These include valuable or breakable merchandise such as cigars, cut flowers, liquids in glass and the like. The parcel post regulations recommend the use of strong wrapping for outer packaging and since the post office looks on fibre containers as excellent answers to this requirement, a great many corrugated boxes are in daily use for parcel post shipments. In addition to offering protection, these boxes are easy to seal efficiently, are light in weight and make a good appearance. Such packages may not exceed 100 in. in length and girth combined. In measuring a parcel the greatest distance in a straight line between the ends is taken as the length and the distance around the parcel at its thickest part is taken as the Shipments of liquids in glass are accepted up to certain definite limits but this does not apply on liquor. The limits are much lower on inflammable liquids.

In general the parcel post requirements are difficult to interpret and apply on new or unusual packages and in such cases the safest procedure is to submit such a package in its final form to the local postmaster before in-

stituting shipments.

Perishables: In July 1935 the Freight Container Bureau of the Association of American Railroads was given full jurisdiction over all containers carrying fresh fruits and vegetables and this includes fibre containers. The Bureau not only issues its own dockets and specifications, but also designs containers, writes specifications and assists in developing new packages or in trying them out on official test shipments. These regulations take precedence over the Freight Classification.

U. S. Government specifications: Until recently, most shipments to the government, and particularly to the Army, had to be made in strong wooden boxes. Since the development of the present emergency, however, many of these regulations have been modernized so that today corrugated and solid fibre boxes are used on many shipments to the Quartermaster Department, to the arsenals and even abroad for carrying Lend-Lease merchandise. The new regulations for the shipment of clothing to the Quartermaster Department will be found in specification PQD-68 dated May 22, 1941, and copies may be secured on application to the Philadelphia Quartermaster Depot. The regulations for the shipment of canned goods abroad in fibre containers will be found in specification FSC-1539-A issued by the Federal Surplus Commodities Corporation, Washington, D. C.

There has always been considerable confusion in government specifications due to the fact that the various departments such as the Army, Navy, Marine Corps and others wrote and enforced their own specifications. Instances have occurred where a company making cake soap, for instance, has had to use three different styles of containers in shipping the same soap to these three branches of the government. In recent years this situa-tion has been greatly ameliorated by the establishment of the "Federal Specifications" applying on all branches of the government. Thus, Federal Specification LLL-B-631a describes corrugated containers and LLL-B-636a describes solid fibre containers. In general these two specifications are the same as Freight Classification Rule 41, the principal difference being that the government requires a higher and more specific degree of water-

Nevertheless, the Army still publishes its own Index of Specifications (260 pages) as does the Navy. The Treasury Department also issues "Regulations No. 6" covering the construction of fibre containers for the

shipment of bottled-in-bond spirits and this takes precedence over all other regulations.

Recipients of government orders should take immediate steps to ascertain exactly what type of container

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is permitted as in many cases this item is overlooked until the last minute and then either the wrong container is on hand or considerable delay is otherwise encountered by attempting to ascertain just what kind

of container is to be used.

Export: There are no uniform specifications covering transoceanic shipments in fibre containers. Many of the coastwise or Panama Canal boats are members of the Consolidated Freight Classification and therefore accept Rule 41 boxes provided they are destined for points in the United States. The transoceanic lines have their own associations such as the North Atlantic Conference but so far this Conference has never issued any uniform fibre box specifications. Their attitude towards the fibre box seems to depend on the state of their business but in general they do not look with favor on this type of container. In such cases as they are accepted, extra strong boxes are usually required and metal strapping is almost universal. This attitude will doubtless change after the war due partly to the probable scarcity of business and partly to the excellent results being obtained by the government on the shipment of Lend-Lease canned goods to England in extra strong fibre containers. Air freight: So far there are no specifications covering the shipment of merchandise in fibre containers by air. Obviously the corrugated box is a natural here due to its light weight and strength and the use of corrugated boxes is destined to show enormous future growth in this field due to the fact that the end of the war will leave a great many planes and a great many plane factories looking for business. The natural source of such new business will be air freight.

Canadian requirements: While Canadian regulations covering fibre containers are not as voluminous nor as detailed as those in the United States, they follow in general the American specifications very closely.

This is particularly true for freight.

Test shipments: The carriers recognize that improved containers and reduced damage claims can be brought about only by constant experimentation and test shipments. For that reason they are very lenient and cooperative in regard to legitimate tests of new fibreboard containers. Sometimes these test shipments can be arranged for by conferring with the carrier involved, but in most cases the Freight Classification Committee or the Freight Container Bureau will issue complete instructions as they have already set up definite procedures for carrying out such tests. In respect to freight, this procedure is described in detail in Rule 49 which has just recently been added to the Consolidated Classification.

Wooden containers

Crates: The simplest form of wooden container is the ordinary crate. Actually the modern crate is not at all simple since an enormous amount of engineering study has been devoted to its structure in order to combine the maximum of strength with the minimum of expense. Much of this research was carried out by the Forest Products Laboratory at Madison, Wisc., augmented by the engineering staffs of the larger producers of lumber and wooden containers. The Forest Products Laboratory has published its findings in a series of bulletins and all crate users should own and study these publica-tions. Not only are the best designs illustrated, but valuable information is also given regarding the proper kind and use of nails for each size and style. This is of paramount importance inasmuch as the method of nailing often means the difference between a good crate and a bad crate. The general Freight Classification specification (Rule 40, Section 2) for crates is very brief, simply stating that they must be made of wood to pro-

tect contents on the sides, ends, top and bottom and so constructed that freight may be taken in or out of the car within the crate; that contents must be securely held within the crate, and that no part of the contents shall protrude. Surfaces liable to be damaged must be fully protected. A detailed description of crates for specific merchandise will be found under Paragraphs Jos. 525 to 568, inclusive.

Wood framed containers: Progressing from the open crate, we come to the wood framed container which can be considered as a crate with enclosed panels. These panels protect the contents from the weather, dust and outside contact. Originally these panels were made of plywood and many still are. Later, solid fibreboard and occasionally corrugated board were substituted for veneer in the interest of economy, lighter weight, and to furnish a surface for display printing. Typical uses are for shipping console radios, cabinets, textiles and other large objects which are not excessively heavy.

The freight specifications for wood framed containers, either corrugated or solid fibre panels, will be found in Section 3 of Rule 41 of the Classification and specific styles are described under Packages Nos. 781, 785, 824,

839, 853, 874, 885, 888 and 915.

Wire bound boxes: These are essentially wood framed veneer panel boxes except that the patented construction permits them to be delivered KD as shooks and they have a lid which can be opened and reclosed. The ingenious use of attached wire reinforcement permits of considerable economies in cost and weight without sacrificing strength. Much of the income from royalty is plowed back into continuous research and sales promotion. Examples are the recent experiments with fibreboard panels and development of a new standard non-bulging crate for citrus fruits.

Wooden boxes: We now come to the old reliable standard wooden box. However, it also has received a lot of scientific study and has developed into many specialized forms for specific purposes. Thus, there are uncleated boxes, others with cleats either outside or inside and various forms of end framing. Some are tongue and grooved, others have lock corners, while special styles are built to order for many specific purposes. In all styles, however, nailing is of utmost importance The nails must be the right size and kind and they must be driven properly. Here again the Forest Products Laboratory has contributed valuable scientific data which

are available to anyone interested.

The railroads do not attempt a general description of wooden boxes other than to say (Rule 40, Section 1(a)) that they must have "solid or closely fitted sides, ends, tops and bottoms securely fastened" and that (Rule 5, Section 1(a)) they must be "in such condition and so prepared for shipment as to render the transportation thereof reasonably safe and practicable." Incidentally, this last clause applies on all shipments tendered for freight regardless of the container used. Detailed descriptions of wooden boxes for specific merchandise will be found under Packages Nos. 179 to 274, inclusive.

Miscellaneous containers

The Freight Classification recognizes a number of other types of containers and a brief reference to them follows:

Baskets: These include baskets made of steel, wood, rattan, splint, bamboo, staves, veneer, willow and wicker. All of these and a few others will be found under Packages Nos. 146 to 169, inclusive, at the end of the Classification book.

Hampers: These are usually made of rattan or canvas, the latter sometimes being lined with wire netting. See Packages Nos. 602 to 606, inclusive, for details.

Cabinets: Packages Nos. 430 to 433, inclusive.
Carriers: This form of container is used for shipping such items as empty glass bottles, bananas, oysters and foods refrigerated with either water ice or dry ice. These refrigerated carriers are insulated. Carriers are often mounted on wheels. Details are shown under Packages Nos. 460 to 473, inclusive.

Trunks: Trunks are often used for such items as salesmen's samples and are listed under Packages Nos. 714 to

718, inclusive.

Egg cases: Egg cases for freight are usually made in standard styles of wood although recently solid fibre and corrugated have been added. Detailed specifications will be found in Packages Nos. 511 and 512 while Package No. 893 describes the fibreboard case for shipment of small quantities.

Racks: Packages Nos. 690 and 691.
Reels: Packages Nos. 695 and 696. Rolls: Packages Nos. 700 to 708, inclusive. Tubes: Packages Nos. 720 and 721. Trays: Packages Nos. 789 and 875. Beams: Package No. 790. Ballots: Package No. 768. On Boards: Package No. 769. Flasks: Package No. 774.

Shipments without containers

Any discussion of shipping methods must include the various methods of making "loose" shipments. At first glance this does not seem very complicated or scientific. Nevertheless, great strides have been made in recent years in the perfection of methods for loose shipping.

The original and obvious loose shipment consists of large bulky items, such as machinery, automobiles and other merchandise either too large to go in a container or else of such a character as to render a container unnecessary. In as much as many of these items are non-recurring and have their shipping and bracing methods worked out individually, it is not possible to cover them in an article as short as the present one. Also it is not desirable to discuss here the shipment of such bulk commodities as coal, grain, etc., except to point out that even here new developments are constantly being adopted such as the carload shipment and handling of bulk cement, molten asphalt, fluid milk, acids and various chemicals.

Of chief interest to us, however, are the many novel methods being used as an intermediate stage between bulk and package merchandise. The modern scientific study of metal strapping and its uses has been one of the chief contributing influences. The proper use of metal strapping has developed within recent years a whole new technique in loading and bracing merchandise in freight cars. One modification is referred to as "unit loading" wherein the contents of a freight car are divided into units which, in turn, are held together with metal straps. Other straps anchor the unit to the car but at the same time provide enough "give" to absorb the impacts of train switching. As a result, greater economy and efficiency have been made in the C/L shipment of such merchandise as automobile frames and other chassis parts, rolls of paper, sewer pipe, drums, barrels, crates (particularly for fruits and vegetables) and similar items. Other modifications of these methods are "bulkbinding," "anchor strapping" and "Conbur bracing."

Complete technical information and assistance is readily available to all shippers on application to the manufacturers of metal strapping or to the various railroad and government agencies such as the Freight Container Bureau (Conbur), the various Shippers Advisory Services, the Transportation Division of the Association of American Railroads, the Mechanical Division of the A. A. R. and the Forest Products Lab. at Madison, Wisc.

The Freight Classification also gives much detailed information on this subject under Packages Nos. 478 to 485, inclusive, and 625 to 655, inclusive. These include methods of bracing and protecting such loose items as pianos, canoes, bottles, building tiles, crucibles, sewer pipe (including the "double unit method") and others. Bracing: Great improvements have been made in methods of bracing, dunnage (see Rule 30 of the Classification), protection at car doors and proper storage in the car. Consult the Transportation Division of the A. A. R. for their voluminous illustrated data. A notable and extremely recent development involving the latest technique in metal strap bracing has been the skillful methods worked out for the boxing and securing of aircraft for rail transportation on flat cars. Two different companies are now specializing on this from a nationwide standpoint.

Skids and pallets: This is another interesting method of shipping which lies between loose handling of materials and complete packaging. It probably started in the paper industry where several hundred pounds of sheets were loaded onto a plain wood skid, wrapped with water-proof paper and securely strapped to the skid for shipment to the printer. Other industries, notably the manufacturers of automobiles and electrical goods, were quick to realize the advantages and economies of this method of transportation and are now using it wherever possible for shipping such items as small motors, wheels, bumpers, clutches, mufflers, fire brick, etc. Additional advantages are the speed with which these skidded units can be handled in or out of the freight car and the ease and convenience of storing.

Simple skids are also used in combination with fibreboard for the protection of heavy objects of a fragile nature such as furniture, refrigerators, ice cream cabinets, etc. Some of these are described in the Classification under Packages Nos. 678 (refrigerators), 710, 711, 712 (using insulated blanket), 752 (telephone booths), 754 (furniture) and 824 (refrigerators)

Another modification is that of strapping several items together without a skid and without any outer container although it is sometimes desirable to have protection between the items. Examples are auto springs, auto fenders, hides, etc.

Packing for export

It might be well to repeat here the often-mentioned subject of proper packing for export. By and large the American manufacturer has been in the past more interested in domestic business than in export markets. As a result many of our export packages have suffered by comparison with those originating in such countries as England and Germany. This has created a bad impression abroad although it must be admitted that many of the larger American companies have devoted considerable study to the development of successful export packages. It seems now, however, that as a result of the war much of our future trade is going to depend on the acceptance of our goods in foreign countries, particularly South America, and one of the chief requirements for success in this field is the use of packages which arrive in good condition and which conform to the customs of the country to which the goods are shipped.

Marking

The need for plain legible marking on containers is obvious, but too often ignored. For instance, great care should be observed in showing the correct state in which the town is located and writing or stenciling this state or its abbreviation should be done very legibly. The reason for this is the almost unbelievable duplication of place names in the United States. Thus, there are 88 towns by the name of Summit and 23 different city names occur in the United States over 20 times each. Other common examples are Washington, Springfield and Manchester. Mass. is often mistaken for Miss., Cal. for Col. and Me. for Mo. Care should always be observed in obliterating all old marks and in the use of plenty of ink with brushes. Free-hand lettering should be avoided and a stencil cutter will soon pay good dividends in accuracy and in improvement of container appearance.

Testing agencies

Scientific testing methods have probably done more to improve existing containers and to develop new ones than any other thing. Probably every alert shipper has tested his packed container at one time or another either by dropping it to the floor or rolling it down a flight of stairs. While this is better than nothing, it is not very scientific or very good for comparison since the result of such methods of testing are usually quite erratic.

For this reason many of the larger boxmakers and box consumers have installed laboratories of their own where accurate scientific tests can be made on proposed containers as well as on stock deliveries. Those who do not possess laboratories of their own have access to several excellent commercial laboratories located in different parts of the country. Some of these available laboratories are:

Forest Products Laboratory, Madison, Wisc. Container Testing Laboratories, Inc., New York City.

Don L. Quinn Co., Chicago, Ill.
Bridgeport Testing Laboratory, Inc., Bridgeport,
Conn.

Pittsburgh Testing Laboratory, Pittsburgh, Pa. Detroit Testing Laboratory, Detroit, Mich.

Arthur D. Little, Inc., Cambridge, Mass.
Package Research Laboratory, Rockaway, N. J.
(wire bound wooden boxes).

In addition to these most of the larger container manufacturers maintain excellent laboratories whose services are usually offered without charge to their customers or prospects.

The railroads are also vitally interested in improving shipping containers with the object of reducing loss and damage claims. Thus, the Association of American Railroads maintains the Freight Container Bureau at 30 Vesey Street, New York, where a force of trained transportation specialists and engineers is constantly studying methods for better shipment of commodities. This study includes not only the designing of containers for specific uses, but also the publication of illustrated pamphlets reporting completed projects. The same is true of the Forest Products Laboratory at Madison, Wisc. Both of these agencies issue lists of the pamphlets that are available. The A. A. R. also maintains a Shippers Advisory Service and other departments for the benefit of shippers such as the Freight Claim Prevention Division and the Mechanical Division, the latter being primarily interested in proper methods of loading and bracing freight cars.

The various trade associations in the packaging industry are also prepared to advise shippers on their container and shipping problems.

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Instead of attempting to furnish a detailed list of books and other publications on this subject, we have selected a few of the more general and significant ones and these are shown in the following list:

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Corrugated and solid fibre cases

by J. D. Malcolmson

HE term "fibre containers" includes both corrugated and solid fibre containers. In 1940 over 93 per cent of all fibre containers were corrugated and less than 7 per cent were solid fibre. This preponderance of corrugated has been growing because the respective proportions in 1930 were 76 per cent and 24 per cent.

Although corrugated paper was first patented in 1871, it was not until 1903 that corrugated freight boxes were first used. They were authorized by the Official Classification in 1906 and then had to defend themselves against the wooden box industry in the famous Pridham case (1912), which was decided in favor of the fibre container in 1914. Solid fibre was developed and recognized

at approximately these same dates.

The growth of the fibre container industry, and particularly of corrugated, has been very rapid from 1914 to the present. The increase in terms of square footage of corrugated during the past 10 years has been from 14 billion sq. ft. to 35 billion sq. ft., the latter being equivalent to 31/2 million boxes of 10 sq. ft. each. In terms of tonnage fibre containers account for about half the total amount of paperboard produced and this paperboard accounts for about 45 per cent of all the paper made in the United States, which in 1940 was over 14 million tons. Even more rapid has been the growth of the kraft liner which passed the jute liner in tons in 1938 and in 1940 had reached a total of over one million tons (932,000 tons of Fourdrinier and 246,000 tons of cylinder) as compared with 800,000 tons of jute.

Principal advantages of the fibre container are comparatively low first cost, light tare weight, saving in space gained by storing KD (knock-down) boxes, ease of sealing and handling, ability to take effective multi-color printing, sanitary single use and avoidance of concealed theft due to the fact that a properly sealed case must be practically destroyed to open.

Styles of fibre containers

While a great many styles are available, the most im-

portant ones are: (See pages 551 and 552)

Regular slotted carton: in which all flaps are the same length making for economy since these flaps are cut in a single straight line operation. This is the most

popular style.

Special slotted carton: This refers to variations in flap lengths such as all flaps to meet or outer flaps with partial or full overlapping flaps. If the outer flaps are of a different length than the inner flaps, an extra expense is entailed for "flap cutting" and it is, therefore, sometimes cheaper to use an overlapping style in place of a flap cut style even though the former may have more sq. ft. of board.

Other styles: These include two- and three-piece boxes, telescope designs, one-piece folders and numerous others, some of which are patented. Corrugated boxes are usually made on straight line, high-speed, automatic equipment. Thus the cheapest styles always have every cut and crease running at right angles to each other and to the outside edges of the blank. A style that contains a curve or an angle between the cuts or creases (other than a right angle) will cost more since it involves special equipment which is usually in the form of die cutting. This means a considerable preparation charge in making up the cutting and creasing die and a slower manufacturing operation. Also, die cut samples must be purchased in large quantities so as to distribute preparation costs, whereas slotted carrons and other right angle styles are run on rotary equipment requiring little in preparation or make-ready.

Nomenclature

The following is a glossary of some of the more important technical phrases used in regard to fibre containers. Also, see Wood Pulp in Paperboard Industry, page 46.

Fibre containers: This term includes both corru-

gated and solid fibre boxes.

Corrugated board: In its simplest form corrugated board is 'unlined,' which is simply a bare piece of corrugated paper such as was originally used for wrapping lamp shades and similar items. If one facing is applied, the product is known as "single-faced board;" with two facings it is called "double-faced board;" with three facings and two corrugations the result is known as "double-wall board."

Corrugations: Corrugations may be made (under railroad rules) of any material that will "produce finished board of adequate rigidity" (Section 2, Rule 41). Until recently this rule itemized the permissible mate-

rials to be used in making corrugations.

Mullen or Cady test: This refers to laboratory instruments which measure the bursting strength of the board in terms of "approximately" lbs. per sq. in.

Certificate of box maker: This is sometimes known as the "imprint" or "Classification stamp." It certifies that the container complies with all railroad regulations

as well as identifying the boxmaker.

Point: A "point" is one one-thousandth of an inch. Thus a .060-in. board is referred to as "sixty point board."

Dimension sequence: In specifying dimensions always use the distance between the openings as the last dimension and the larger of the remaining two as the

Joint and seam: The railroads define joint as the result of the operation done by the box-maker in taping or stitching the fourth corner of the box. The seam is the juncture formed by the shipper in sealing the box with gummed tape.

Manufacture of fibre containers

Fibreboard and its products are made almost entirely on high-speed, straight-line, rotary equipment. In other words, gigantic rolls of fibreboard are the box shop's raw material. In making corrugated board, one of these rolls is fed into a pair of metal corrugating rolls which essentially are meshed gears anywhere from 4 to 7 ft. wide. The application of heat and moisture causes the corrugation to retain its shape and, almost simultaneously, the two outer facings, feeding in from other rolls, are glued to the tips of the corrugations. In the case of solid fibre, the sheets coming from the rolls are simply laminated together by having the surfaces of the inner plies entirely covered with an adhesive. In both styles of board the freshly combined web is carried through driers and finally through slitting and cut-off knives which deliver blanks cut to size. These rectangular blanks are then run through other rotary equipment for creasing, slitting, slotting and printing. The blank is then formed into a box by joining with either stitches or tape and shipped to the customer in flat KD form.

Modern printing methods have made it possible to print attractive advertising copy on the smooth surfaces of the box at practically the same cost that would be required for ordinary type matter. This permits the alert merchandiser to make valuable use of this free bill board space.

A corrugated box depends largely for its rigidity on the invisible corrugations. The blank goes through the various operations of the box shop without distortion of these corrugations so that the final box possesses maximum rigidity. The true shape of these corrugations cannot be observed along the edges of a box because the slitter knives have to crush these edges before they cut through. However, by going back a half inch or more from the edge and cutting through the board with a safety razor blade, it can be observed how perfectly these corrugations have been formed and how they have preserved their original shape. The corrugations contribute lightweight, cushioning to resist impacts and the most efficient insulation per dollar of any box material available.

During the development of the corrugated box, a great many different materials have come and gone in popularity. Today the trend is towards Fourdrinier kraft made in the South. This sheet possesses maximum strength, bending quality and rigidity, and provides the lightest possible tare weight, and thus, a very appreciable saving in freight.

Many special forms of containers are available, such as some protected against the passage of moisture by a buried layer of asphalt or by a surface treatment of hard wax. Others are lined with grease-proof papers for the packing of oily materials.

Testing and specifications

In the early days of the fibre container industry few if any tests were standardized, the principal one being Mullen test and caliper. As the industry expanded, more and more attention was given to testing standards and this has been greatly accelerated in recent years due to the desire of boxmakers, box users and carriers to reduce the subject to definite specifications that could be enforced and duplicated. Thus, many purchasers of fibre containers maintain laboratories for checking quality of incoming shipments and, also, include more or less detailed specifications in their contracts or inquiries.

For the same reason most boxmakers operate testing laboratories and the various testing instruments are also available at the independent laboratories such as The Container Testing Laboratories, Inc., New York, N. Y., and the Don L. Ouinn Co., Chicago, Ill.

The National Retail Dry Goods Association has issued a 120-page book known as the "Wrapping Supply Manual" which includes standard sizes and specifications for corrugated containers and single faced corrugated rolls. The National Association of Purchasing Agents has also published an eight-page booklet on the subject of testing and specifications of corrugated containers and another booklet describing the various types of paperboard used in making these boxes. The National-American Wholesale Grocers Association has done valuable work in the development of standards. Occasionally they issue releases known as "News Circular Service" including suggested calipers and Mullen tests for fibre can cases. Other publications are mentioned in the bibliography, at the end of this chapter.

The technical developments in the testing of fibre containers have grown so rapidly that today there are available instruments for measuring bursting strength, moisture content, weight, caliper, rough handling (drum tester), compression (not only of the finished box but of the double faced corrugated board and the individual sheets going to make it up), impact, tearing, water-proofing, tensile strength bond between components, ink fading, crease strength, etc.

It is well to emphasize that fibre containers, as is the case with all paper products, are very susceptible to moisture gain or loss with every change in atmospheric humidity. These changes in moisture content have a very decided effect on the test of the board. For instance, a corrugated box showing a Mullen test of 240 at 40 deg. relative humidity can easily drop to 160 at 90 deg. The same effect is true to a lesser extent on the drum test and to a much greater extent on the compression test. It is, therefore, very important that in testing fibre containers or reporting on such tests some indication should be added in regard to the atmospheric humidity at the time the test was made. A great many arguments develop from failure to do this.

A-flute versus B-flute

Much confusion has been caused by the indiscriminate use of A-flute and B-flute corrugated boxes. When corrugated board was first introduced, it was all made A-flute with a corrugation $^3/_{16}$ in. high running about 36 to the foot. A more recent development is B-flute, corrugation $^1/_8$ in. high running about 52 to the foot. On the great majority of shipping containers it makes little difference whether A-flute or B-flute is used as far as the efficiency of the container is involved. On large cases, which are not supported to any extent by the contents, A-flute makes a more rigid wall. On very small cases, B-flute folds up more accurately and makes a more efficient container. A-flute affords a better cushion against outside blows, particularly when the contents are fragile, but B-flute is harder to puncture as the two liners are

closer together and support each other in resisting the blow. For strong solid contents, such as canned goods, B-flute is very efficient particularly at the horizontal creases which are in contact with the sharp edges of the cans. B-flute board naturally occupies less space not only in the KD containers, but also in packed boxes. In one instance a shipper was able to insert an entire extra top layer of boxes in his freight car after changing from A-flute to B-flute. B-flute also resists the drastic clinching of stitching wire better than A-flute and it is more desirable on die cut work. Most double wall board is made of a combination of A-flute and B-flute. Occasionally an in-between size is used known as C-flute, which is seldom manufactured.

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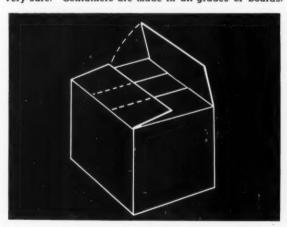
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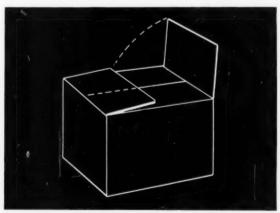
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TYPES AND STYLES OF FIBRE CONTAINERS

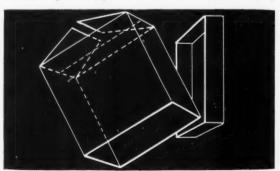
Regular slotted container. It is so made that the outer flaps meet at the center of the box. The inner flaps do not meet. When the article shipped does not require the protection afforded by two thicknesses of corrugated board over the entire areas of top and bottom, this container is very safe. Containers are made in all grades of boards. Center special slotted container. Made of the same grades of board as the regular slotted container, this differs only in that it has more strength at the top and bottom of the box because the outer flaps and the inner flaps meet at the center of the box. Glue, tape, or stitching is used to seal it. All end areas are covered by two thicknesses of board.

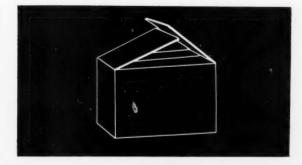


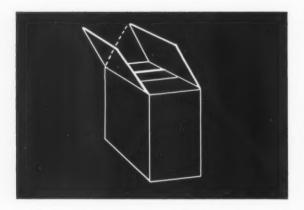
Half slotted container. The half slotted container differs from other types only in the fact that it provides for a separate cover instead of having both ends made in slotted container style. Adapted for use as a cracker caddy.



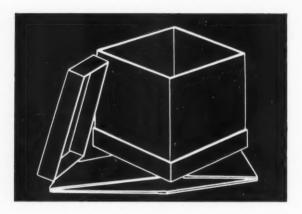
Overlap slotted container. The outer flaps, instead of meeting at the center or side of the box, overlap, generally about 2 in. It is made of all grades of materials and in all sizes. Sealing requirements same as slotted container.



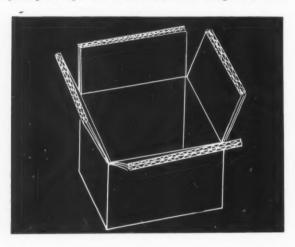




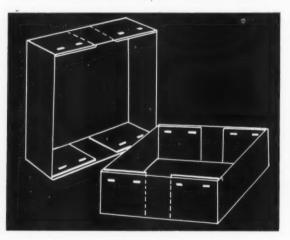
Full flap slotted container. A variation of the general slotted type of container in which the outer flaps completely overlap. Used where additional strength is needed.



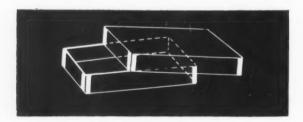
Double cover box. A type popular with manufacturers of commodities which do not readily ship in standard containers. Sidewall without flaps plus top and bottom covers.



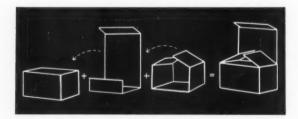
Double wall container. Where the ordinary corrugated box is not strong enough, the double wall container provides the ideal solution. Rule 41 permits higher gross weights.



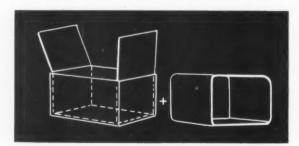
Telescope design box. A type in which body and cover fold flat for shipment and which are erected with wire staples just prior to packing. This is a hardy container.



Telescope box. Essentially a stayed set-up full-telescoping box made of corrugated or solid board. Box is designed primarily for use where but little depth is required.



Double lined slide box. The three parts of the box, when put together, provide a double thickness of board on every side of the commodity. Known as the 3-piece Lambert box



Triple slide box. This box has two thicknesses of board at all sides which support the commodity it contains.



One piece folder. Consists of a single piece of board properly scored, for books, catalogs and similar flat objects.

Wooden boxes and shipping containers

HREE general types of wooden boxes and crates are utilized as shipping containers, respectively, sawn wooden boxes, plywood boxes and wirebound boxes. Although available in hundreds of sizes and weights to accommodate products ranging in size from pencil leads to bombing planes, wooden boxes made from sawn lumber are all classified under seven distinct headings known as Styles 1, 2, 2½, 3, 4, 5 and 6. The box styles are illustrated below and a brief description of each follows.

The Style 1 box, simplest of all, is adaptable to many types of products, with 60 lbs. as a reasonable weight limit. Boxes of this type consist of a single thickness of lumber made from one or more pieces of wood, with sides, top and bottom nailed to the ends. Top and bottom boards are nailed to the side grain of the ends and the side boards are nailed to the end grain of the ends.

In Styles 2, $2^{1}/2$ and 3, each end is strengthened with four cleats. The ends are thus reinforced against splitting and the sides are strengthened by the greater holding power of nails driven into the side grain of the vertical cleats. For gross weights of more than 200 lbs. and for large containers such as are used for textiles, these styles are commonly used.

The Style 4 box is designed to carry loads up to 200 lbs. and to withstand severe handling. The two heavy cleats at each end of the box will strengthen the ends against splitting, provide side-grain nailing for the sides and help to take the thrust if the box is dropped.

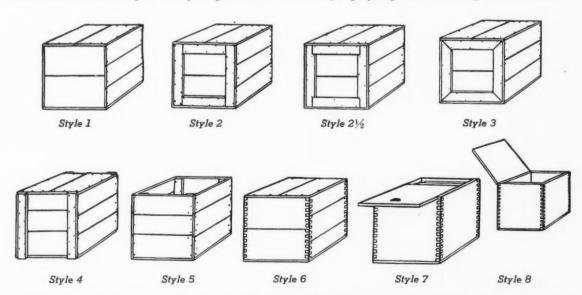
When the question of storage space makes desirable a reduction in the outside length of the package and when the shape of the contents is such as to leave space in the corners of the box, cleats are placed on the inside to form the No. 5 box. These cleats may be either square or triangular.

Style 6 boxes, with lock-corners, are often used when tight, rigid packages are required. Weights carried usually range from 10 to 150 lbs. Lock-corner boxes are of particular value for products that are subject to sifting or where maximum rigidity is required.

In selecting any one of the seven styles of boxes, a shipper may be influenced to some extent by the comparative initial cost, without giving due consideration to other important factors. In general, Style 3 boxes cost the most and Style 1 boxes the least. Although the difference in cost is not great, there is a big difference in the performance of the several styles of boxes.

The distance the box must travel and the transportation facilities to be used, will appreciably affect the design, as will the use of reinforcing metal straps or wire. Although there is an impression among shippers that lighter containers may be used for carload shipments, it should be remembered that, except in rare instances, every container may move in less-than-carload traffic.

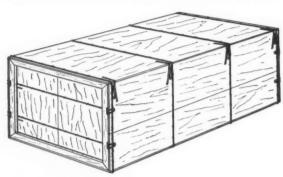
Boxes rigidly constructed from sawn lumber, in itself tough and hard, offer a high degree of protection against cutting, puncturing and abrasion. Wooden boxes may be stacked without special braces and cars or trucks may be completely filled. Warehouse charges, usually figured on the basis of floor space occupied, can frequently be cut by high piling, without damage to containers.



Style 1: Nailed wooden box; uncleated ends, sides held by end grain nailing. Style 2: Nailed wooden box; double cleated ends eliminate weaknesses found in Styles 1, 4, and 5. Styles $2\frac{1}{2}$ and 3: Variations of Style 2 box. Style 4: Nailed wooden box; outside cleats. Style 5: Nailed wooden box which has inside cleats. Style 6: Lockcorner box with the cover and bottom held in place by nailing. Styles 7 and 8: These are variations of Style 6 box.



Typical plywood box construction. There are a number of plywood styles, varying with the nature of the load, the weight per package and the hazards of transportation.



Typical wirebound box—one of a number of constructions utilized widely in fruit and vegetable shipping as well as in many other industries. They may be printed in colors.

Wooden boxes provide a difficult barrier for sneak thieves and offer protection against rodent attack. Not being affected readily by moisture or humidity changes, wooden boxes, when properly packed, often protect their contents from rain or snow for considerable periods.

Plywood boxes

The thickness of material does not alone determine strength. Plywood is an improvement upon nature—made by the gluing together and crossing of the grains of two or more pieces of thin wood, called veneer. Plywood, weight for weight, is stronger than other materials and this light, strong material is reinforced with sawn lumber cleats in a number of ways to produce the standard styles illustrated. For many uses, special styles are needed and these are scientifically designed to meet conditions. Each commodity presents a separate problem, so that various thicknesses of plywood and sizes of cleats are used. Often, unless shipping experience is available, laboratory or other tests to determine correct construction are necessary.

Plywood box parts are all one-piece, this being one of the factors accounting for the great strength, the light weight and the protection against dirt and pilferage, making assembly of the shooks very simple and economical and insuring that all shooks received can be assembled without loss.

For many commodities, internal bracing is necessary and the one-piece construction of plywood boxes is such as to add strength to this bracing and often makes possible a simplification not attainable where like rigidity is not supplied.

Thickness of plywood used varies from $^3/_{24}$ in. to $^5/_{16}$ in. in 3-ply and, for very heavy or export work, 5-ply as thick as $^1/_2$ in. is at times used. The cleats most generally used are $^11/_2$ in., 2 in. and $^21/_2$ in. in width and $^3/_8$ in. or $^{13}/_{16}$ in. in thickness.

Sizes range from those made to carry very small articles to those 200 in. or more in length, many of which carry extraordinary weights.

Wirebound boxes

Wirebound boxes are light-weight, wooden shipping containers, reinforced by steel wires securely stapled to four of the surfaces—the sides, top and bottom. The wooden parts are made thick enough to provide the necessary resistance to crushing, puncture and moisture and thin enough to spring under shock and transmit the stresses to the steel wire framework. The fundamental principle underlying the construction of these boxes is that strength from steel wire costs less than strength from wood. The substitution of wire for wood results in lower tare weights, box cost and freight charges.

An outstanding development in this type of container is the All-Bound Box, which has binding wires stapled to all six surfaces—a 50 per cent increase—and is closed with Rock Fastener closures. These boxes are delivered all in one piece, knocked down, instead of three pieces. Only a fraction of the space is required as for set-up boxes. They are easily set-up by hand, by one man, at rates of from 100 to 150 boxes per hour. Rock Fastener closures are interlocking loops with ends turned back, driven through the wood and clinched.

Commodities of almost every character are being carried in such boxes, weights varying from a few pounds to a ton. The boxes can be printed attractively on any or all faces, in one or two colors.

Crating

Crates are frequently used for the transportation of a wide number of articles. For many uses, special styles are needed and these are scientifically designed to meet conditions. Each commodity to be shipped presents a separate problem.

In all instances, however, the crate must be big enough to entirely enclose the article or articles and no parts must protrude. Also a space of at least one inch must be provided between all finished surfaces and the inside of the crate. The merchandise packed within must be blocked, braced or fastened so that it cannot move around inside the crate.

Selection of lumber, nails and type of construction will depend largely upon the merchandise to be crated, whether or not the product is to be stored for some length of time, whether it is to move to a hot, humid destination from a cold, dry temperature or vice versa and whether it is going to move by water as well as by rail.

The Freight Container Bureau, 30 Vesey St., New York, has issued Bulletin 6 on the essentials of crating.

Steel strapping shipments

by V. C. Hogren

BEYOND production lines of every industry are hazards from which properly applied steel strapping offers effective and economical protection. The thought, the care, the hours of effort required to produce and package a product—mean little to the customer whose merchandise reaches him in poor condition. Until some attractive business has been lost to a more enterprising competitor shippers usually do not know that claims have been filed with the carriers.

Besides its function in reinforcement, steel strapping often reduces shipping costs by permitting the use of lighter, less expensive containers. It speeds up the handling of materials by making skid-shipping practical, safe, and economical.

Strapping also permits the baling of many items—notably textiles—which conserves valuable shipping and storage space yet fully protects the commodity. The use of strapping to brace carload freight has directly lessened claims for damages, cut freight bills by reducing dunnage, and speeded up and simplified loading and unloading operations.

The value of reinforcing a shipping pack with steel-strapping has long been recognized by the U. S. Government whose Federal Standard Stock Catalog includes strapping as an integral part of the packing specifications for a number of commodities. Specifications QQ-S-781, 42-S-11 and NN-B-621A cover strapping as required by the various branches of the Federal Government.

Types of Strapping

Steel strapping is available in two types: 1) nailed and 2) nailless.

Nailed strapping, necessarily confined to wooden packages, is held in place (usually at the extreme ends of a box) with nails. Since the application of nailed strap can seldom maintain the speed required in modern shipping rooms, the use of it is diminishing except for export packs and to reinforce boxes of bottles, lugs, tote

boxes, etc. Strapping to be nailed is usually annealed (soft) to facilitate nailing—although some kinds are furnished with nail holes already punched. (See Table No. 1.)

Nailless Strapping, developed rapidly in recent years as improved equipment, has accelerated the operation to keep pace with fast moving production lines. The strapping is first pulled tight around a package and the two ends are joined together with a metal seal. Separate hand tools (stretcher and sealer) and a one-piece, automatic device to tighten, seal, and cut the strap speedily are available for every type of shipping pack from parcel post to carload ladings.

Proper application requires that the tension on the strapping be sufficient to cut the corners or edges of the

TABLE 1. NAILED STRAPPING: SIZES AND WEIGHTS

.015 IN. THICK: LIGHT AND MEDIUM WEIGHT PACKS

Width	Sma	Small Coil		Large Coil	
in Inches	Ft.	Lbs.	Ft.	Lbs.	Pounds per M Ft.
3/8	300	5.7	4000	76	19.1
1/2	300	7.6	3000	76	25.5
5/8	300	9.6	3000	96	31.8
3/4	300	11.5	2000	76	38.2
7/8	300	13.4	2000	89	44.6
1	300	15.3	1500	76	50.9

.028 IN. THICK: HEAVY AND BULKY PACKS

Width	Small Coil		Large Coil		Estimated Pounds
in Inches	Ft.	Lbs.	Ft.	Lbs.	per M Ft.
1/2	300	14.2	3000	143	47.5
3/8	300	17.8	2000	119	59.4
3/4	300	21.4	2000	143	71.3
7/8	300	25.0	1500	125	83.2
1	300	28.5	1500	143	95.1

1. This machine is anchored to a wooden base. The box serves as a hood, held in place with steel bands. No nails are used to close this package.

2. Strapping cartons to crate base. Strap receptacle is overhead in this crowded plant.





box slightly. Straps should always be applied at right angles to the edges of the pack so that the reinforcement will sit squarely on the box.

Nailless strapping is ordinarily furnished in coils weighing from 60 to 100 lbs. each; coils of measured length and cut lengths are also available for special applications. The black painted or lacquered finish is the most widely employed although zinc coated (galvanized) is preferred by some shippers especially for export or where the packages are stored for long periods of time. (See Table No. 2.)

Wooden boxes

Based on literally thousands of tests conducted by the Forest Products Laboratory (U. S. Department of Agri-

TABLE 2. STANDARD SIZES OF NAILLESS STRAPPING

(WEIGHTS AND FOOTAGES ARE APPROXIMATE)

Width, Thickness in Inches	Ft. per Lb.	Lbs. per 1000 Ft
14 × .015	78.55	12.73
$\frac{1}{4} \times .020$	58.89	16.98
$\frac{3}{8} \times .010$	78.55	12.73
$\frac{3}{8} \times .012$	65.45	15.28
$\frac{3}{8} \times .015$	52.45	19.10
$\frac{1}{2} \times .010$	58.89	16.98
$\frac{1}{2} \times .012$	49.06	20.38
$\frac{1}{2} \times .015$	39.22	25.47
$\frac{1}{2} \times .018$	32.75	30.56
$\frac{1}{2} \times .020$	29.44	33.96
5/8 × .010	47.13	21.22
$\frac{5}{8} \times .012$	39.22	25.47
$\frac{5}{8} \times .015$	31.41	31.84
58 × .018	26.18	38.20
$\frac{5}{8} \times .020$	23.32	42.45
5 ₈ × .023	20.48	48.82
$^{34} \times .015$	26.18	38.20
$\frac{3}{4} \times .018$	21.81	45.85
$\frac{34}{4} \times .020$	19.63	50.94
$\frac{3}{4} \times .023$	17.05	58.58
$\frac{34}{4} \times .028$	14.03	71.28
*34 × .035	11.23	89.14
*34 × .050	7.85	127.34
*1½ × .035	6.73	148.58
*11/4 × .050	4.77	212.24
*2 × .050	2.95	339.60

^{*} Sizes generally used for bracing carload freight.

culture) at Madison, Wisconsin, the thickness of lumber for the top, bottom, and sides of a nailed wooden box can be safely reduced 20 per cent to 40 per cent when the package is properly strapped. (See Table No. 3.)

Suggested sizes of steel strapping for various gross weights of packed containers are given in Table No. 4. These recommendations are not arbitrary because the nature of the product, method of handling, internal packing requirements, kind and grade of lumber used, nailing, and construction are important factors which must also be considered.

A single strap should be placed around the middle of the box. When two straps are employed, each should be one-sixth of the length of the box from the ends. With three straps, the outer two should be at the same distance and the third at the middle. Three or more straps are suggested for relatively long packages.

A recent popular development is the strapping of wooden containers to hold the cover in place without the use of nails. To open the package, receivers merely snip the straps. As the cover is intact, such boxes can be re-used for shipping or storage.

Wooden crates

Steel strapping is valuable to keep the several parts of a crate in position and add the strength needed to withstand abuse in transit. As is the case with wooden boxes, the thickness of the lumber in a crate can usually be safely reduced. Whenever possible the straps should be applied around the short dimensions of the crate, over the slats. As an extra precaution U-shaped staples are sometimes nailed into the cleats over the bands.

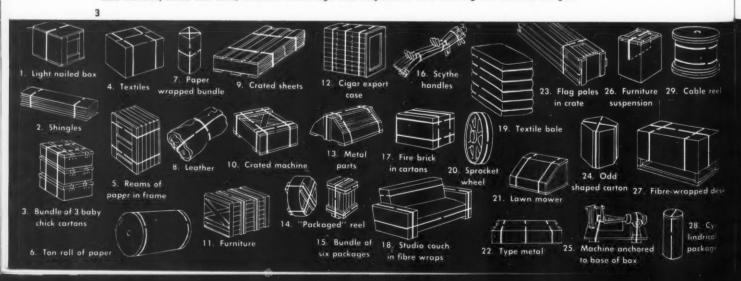
Steel strapping is also used to brace products within crates to prevent internal shifting. Cartons holding the separate parts are sometimes strapped to the bottom or sides of crates containing stoves, machinery, washers, etc.

Cartons

By providing a greater margin of safety, steel strapping often permits the use of fibre and corrugated containers for products that would otherwise have to be packed in more expensive packages.

Many items, particularly textiles, can be shipped in

3. Various uses for steel strapping including cartons and wrapped packs, cases and crates, bales and bundles, skids and rolls, internal anchorage and suspension and bracing for carload freight.



"overloaded" cartons at lower freight rates when steel strapping is employed. For data on specific products shippers should consult the Consolidated Freight Classification.

Two or more cartons can be strapped into conveniently handled units, which prevents individual packages from being lost enroute. Only one shipping label is required on such a bundle.

The Express Classification requires that packages weighing less than ten pounds be charged at the rate for that weight, but if two or more such packages are strapped into a single unit for one consignee, the rate is based on the aggregate weight. For example, three 9-lb. packages shipped individually would be billed at the express rate for 10 lbs. each or a total of thirty pounds. If these same cartons were strapped into a single package for one destination, the shipper or receiver would pay on the basis of only twenty-seven pounds. (See Fig. 3, sketch 40.)

Internal bracing of furniture, such as novelty tables (Fig. 3, sketch 26), is easily accomplished with steel strapping. To prevent movement and consequent damage the product is firmly held to the base or top of the carton. As indicated in the sketch, the actual strapping of the container is done from the outside.

Fibre and corrugated wraps

Adequate protection to such diversified products as studio couches (Fig. 3, sketch 18), steel shelving, safes, metal bars, desks (Fig. 3, sketch 27), and millwork is made possible with fibre or corrugated wraps held in position by steel bands. The savings in packing, in material, in time which results from this practice are obvious. The receiver also benefits as snipping the straps quickly opens the package.

No general rule as to strap sizes can be formulated for specific products as individual packing practices vary. However, the vast possibilities for reducing shipping costs with steel-strapped wraps warrants investigation by manufacturers.

Bundling

The method of bundling is practical only on products that do not need protective covering. (See Fig. 3, sketches 2, 6, 8, 16, 20, 33, 34, 35, 37, 39, 41, 44, 45, 48, 49, 50, 51, 52, 53, 55, 56, 58 and 59.)

Definite appeal to shippers for packages of this kind can be obtained by having the company name, slogan, sales message, or trade mark printed continuously on the strap. It thus becomes a new advertising or promotional medium for the manufacturer.

Bales

Baling received its greatest impetus after World War I when shippers learned the savings which the Government had effected with this type of pack.

Obviously many products cannot be baled but, in general, any item that can be compressed is suitable for baling. Some of these are: Bags, bedding, blankets, cloth, dry goods, feathers, fur, hair, hemp, hides, kapok, leather, mattresses, piece goods, pulp, towels, woolens, and yarns. Valuable storage space is saved, costs of transportation (especially on freighters), handling, and packing are reduced.

Burlap or water-proof paper is generally used as a covering material and the straps are applied while the bales are under compression. Tension is not required as expansion of the bale when released tightens the straps and takes up any appreciable slack.

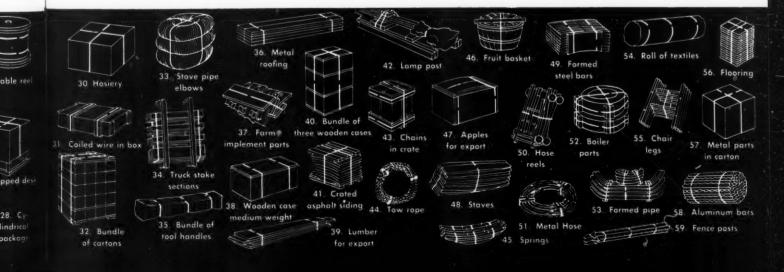
. The number of straps required depends upon the size, weight, and value of the baled contents. For small bales, four bands usually suffice—others may require from five to ten. The $\frac{5}{8}$ in. and $\frac{3}{4}$ in. widths of strapping are employed on almost all types of bales.

TABLE 3. PERMISSIBLE REDUCTIONS IN LUMBER THICKNESS

Thickness of Sides, Top and Bottom of Wooden Shipping Containers, in Inches

	Strapped		
Unstrapped	One Strap	Two or More Straps	
7/8	5/8	1/2	
13/16	5/8	1/2	
5/8	1/2	3/8	
9/16	7/16	5/16	
1/2	3/8	5/16	
7/16	5/16	1/4	
3/8	5/16	1/4	

(Data from Bulletin No. 14: Domestic Commerce Series; United States Department of Commerce.)





4. Blind operator applying steel strapping to carton.



5. Baling of textiles saves space, time and money.

Skids

By moving production on steel-strapped skids it is possible to speed up the handling of materials, conserve valuable storage space, reduce the possibility of accidents to workmen, decrease claims for damage, increase good will in customers and substantially cut costs.

Paper manufacturers were the very first to recognize the possibilities of skid shipping and this method has been accepted as standard for years by paper shippers and receivers alike. Consider the added costs for packaging and labor if paper could not be steel-strapped to easily movable skids—weighing up to 5,000 pounds each, and handled by one man! Steel producers are also large users of skids which not only permits easier unloading of cranes but also enables one man with a lift or power truck to move easily to the point of fabrication, loads weighing several tons.

The automotive industry has adopted skid shipping with excellent results for the manufacturers of both automobiles and parts. Products such as clutches, bumpers, mufflers, steering gears, oil filters, axles, wheels, wheel frames, springs etc., and transmission units are a few of the items that safely and economically move from the producers to the assembly lines.

Packaged articles in cartons and boxes are also placed on steel-strapped skids for ease in handling. Practically every industry can advantageously use this modern shipping method for inter-plant movement and delivery to the customer.

TABLE 4. SIZES OF STEEL STRAPPING FOR WOODEN BOXES OF VARIOUS GROSS WEIGHTS

Gross Weight of Box	Dimensions of Strapping in Inches, when Different Number of Straps Are Used					
in Pounds	One Strap	Two Straps	Three Straps			
50	½ × .020	3/8 × .015				
100	$\frac{5}{8} \times .020$	$\frac{1}{2} \times .018$	4			
200	$\frac{3}{4} \times .023$	58 × .020	$\frac{1}{2} \times .018$			
300		$\frac{5}{8} \times .023$	$\frac{1}{2} \times .020$			
400		$\frac{3}{4} \times .020$	$\frac{1}{2} \times .023$			
500		$\frac{3}{4} \times .023$	5/8 × .023			

Some skids are designed for one trip and are nonreturnable. The construction of the skids is important and the entire application requires study to meet conditions of stowing, storage, and customers' facilities. Lift truck and strapping manufacturers have accumulated a wealth of available information on this subject.

Carload ladings

The effectiveness of strapping extends also to carload ladings. Straight and mixed loads, pool and stop-over cars can also enjoy the benefits of strapping.

That the carriers recommend strapping for many commodities is evident from the publications of several divisions of the Association of American Railroads. Carriers use strapping in their own terminals for bracing LCL or merchandise cars and for re-coopering broken packages.

In box cars, steel bands are applied to half-car units of freight which permits them to absorb rather than resist shocks during transportation. Bands are also used to anchor products in box cars as well as on gondola and flat cars. Strapping is employed to brace doors of the cars using a special strapping with high tensile strength for this purpose. Tools are available to brace all types of ladings.

Strapping setup important

Steel strapping can be used advantageously only when the proper equipment is installed and the correct size of band is applied. Some packages lend themselves to automatically seal-fed strappers, mounted as an integral part of the production line; others require hand tools. In some instances movable stands for the reels are advisable while in others stationary coil holders, mounted from the ceiling or placed on the shipping floor, will permit the most efficient application of strapping. Each case is different and merits competent counsel.

Strapping has become a vital part of the packing operations in every industry. It is rapidly being recognized that what happens to a product *after* it is made is equally as important as any situation confronted by the sales, engineering and production departments.

IRE stitching, as a method of assembling and sealing containers, is easy to apply and makes a joint that is securely fastened. It is suitable for any type of container irrespective of size, construction of the flaps, or the kind of board. The process is inexpensive, as moderately priced machines are available and wire stitches cost only three to five cents a thousand. There is no waste of either time or material, when a box is stitched. Furthermore, when goods must be repacked or stored, the stitches may be easily removed without appreciable damage to the case.

All wire stitching machines are variants of the simple box stitcher. This comprises a stitcher head, a body or frame which supports the head and also contains the driving mechanism, a base to support the body and a horizontal arm to hold the work. The end of this arm contains the clinching device.

Stitching heads are of two general types: 1) wire fed from the side; 2) wire fed from the top. Both types have a mechanism that feeds the wire and cuts it into predetermined lengths. It then receives the piece of wire and transfers it to the bending mechanism, which forms the legs, and the stitch formed is supported and guided while it is being driven through the material. The arm contains a grooved clincher which receives the legs of the stitch and bends them inward and tightly against the under side of the flaps of the container.

Heads with side-fed wire are usually employed for the stitching of containers, since they can be more ruggedly constructed, while the vertical-fed type is used for multiple-head work.

The clinching arm can be quickly adjusted up or down to accommodate varying thicknesses of material, and the wire feeding is also instantly adjustable. Angle arms can be obtained for handling special classes of work, and adjustable gages for facilitating repetitive operations. Machines are available with the stitcher head so adjusted that stitches can be driven at a 45-deg. angle to the grain or the corrugations of the container board.

Many different sizes and shapes of wire may be used. The wire most frequently employed is of copperized or galvanized steel, .103 in. wide and .017 in. or .020 in. thick. Another popular type of wire is 0.60 in. wide and .020 in. or .024 in. thick. The number of stitches of average length in a pound of wire will run from 1,600 to 2,500 and the cost from three to five cents a thousand. The ends of the wire can be cut square or at an angle of 45 deg., as desired. Stitching wire comes on 10-lb. spoolless coils, an aluminum spool-holder being used in setting it up on the machine. The usual crown length is $^3/_8$ in. or $^7/_{16}$ in., although for certain special purposes longer

or shorter crowns are sometimes employed. The width can be changed by installing the proper parts.

The following sections describe the more usual applications of wire stitching in the assembling and sealing of containers as now practiced and also certain uses for special purposes.

Slotted containers

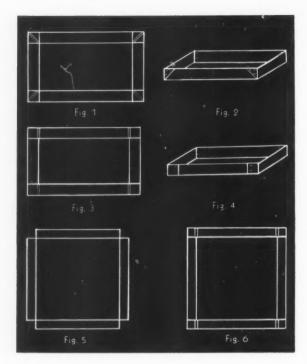
Although it is quite possible to stitch the manufacturer's seam of regular slotted containers on a standard box stitcher, it is not the usual practice for runs of any considerable length. Most plants use a special type of machine, developed expressly for this purpose.

If production is limited, and the standard box stitcher is used, the box blank is folded over the arm, with the flap in position, and stitched as it is being withdrawn from the machine. The advantage in making up boxes in this way is that the flange may be more accurately opposed to the adjacent side than when the box is folded on the creases and then stitched. Stitches are placed 2¹/₂ in. apart, with tie stitches very often used at each end of the seam, although on boxes less than 18 in. in depth the classification permits a spacing of 3 in.

The regular stitcher for slotted containers has a table on which the blank rests and also a device with an open head or clincher tongue which is bolted to the stitcher head and rigidly or semi-rigidly supported by it. This device serves merely as a double guiding member and clincher arm to hold the flange and the opposite side panel in proper position during the stitching. The blank for the box is folded along two opposite creases so that the flange overlaps the adjacent panel; both flange and panel are then guided through the open head and stitched. The finished box is removed from the discharge end of the machine, thus making a continuous operation in one direction.

The practice usually followed is to have the operation handled by two girls, one of whom folds the blanks on the creases and passes them to the other girl, who pushes them through the open head of the machine and stitches the seam. The size of the box, particularly the depth, and the skill of the operator are factors which determine the rate of production. It is possible for one girl to handle the entire operation, but the speed is materially reduced.

Important developments have recently been made on the automatic stitchers used for this work. When using this new type of machine, the operator has only to fold the blank, which places the stitching flap in an overlapping position, and feeds it into the open head of the machine. The machine automatically picks up the



blank, feeds it, inserts the stitches at predetermined spacing, and ejects the completely stitched blank at the rear of the machine by means of high-speed rolls. The operator meanwhile has folded another blank ready for feeding. Tie stitches may be placed at each end of the blank, if desired.

To increase production and reduce labor costs, automatic elevators have also been developed which can be attached to either the regular hand stitcher or the automatic machine. This elevator consists of a roller table which will lift a pile 42 in. high and is equipped with a governor which keeps the blanks on the top of the pile at constant feeding level, regardless of their thickness. When the pile has been fed off, the table is lowered quickly, loaded with a new stock of blanks, and the operator immediately begins to feed the new pile into the machine. Production can be increased 20 to 30 per cent with this elevator.

Three-piece (Bliss) boxes

In one style of three-piece box the flanges to be stitched are made a part of the body blank. This is usually assembled on a box stitcher, with a nub placed over the end of the arm to form a guide or spacer and bring the stitches right to the center of the flange; a panel holder is also furnished. The operator first pushes the top flap of one end panel into the panel holder, then folds the body into shape and pushes it over the end panel. Holding the sides and end panel firmly in the hands, the box is placed over the stitching arm and the bottom flange is attached by means of a single stitch in the center. The three flanges are then stitched together, tie stitches usually being placed at the top and bottom of the side flanges for greater rigidity and strength.

In another type of this box the flanges are made part of the end panels. This is assembled on a special stitcher which has two heads set at 45 deg. A movable and adjustable work table is placed between the stitcher heads, and the edges of the table serve as guides in the assembly of the box. The body blank is laid on the table with one top flap bent down in front of the operator, who holds the two end panels in position against the sides of the table so that the flanges overlap the first side of the box in the proper position for stitching. One stitch is placed while the table is in its outward position; the table is then pushed in and the remainder of the stitches placed in order, automatically spaced. The body blank with the ends attached is then moved forward and bent over the end of the table, thus presenting the bottom for stitching. The flanges on the bottom of the ends are folded in place and stitched as before. The third operation is a repetition of the second and this completes the assembly of the container.

Telescope boxes

The blanks for heavy telescope boxes are received flat by the customer and may be creased twice at each corner, with diagonal slotting, so that the corner flaps fold up in triangular form, against either the ends or the sides of the box as desired. (Figs. 1 and 2.)

The flaps are stitched on a box stitcher in the manner shown, the number of stitches to be placed depending upon the weight and character of the contents. Sometimes one of the triangular flaps is folded outside the end and the other inside the side, both being stitched in place to give added strength. Another method of making up such a box is to crease and slot the corners so that when it is assembled, it makes rectangular corner flaps which are folded up against either the end or the side of the box. (Figs. 3 and 4.)

Folding suit boxes

A suit box, whether in two pieces or one is usually stitched by hand on a single-head stitcher provided with a gage. Display boxes, laundry cases, and hardware boxes are of the same general type and all can be set up quickly by this method. Light-weight stock is generally used in these boxes.

Cracker caddy covers

The covers of the familiar cracker caddy are about $10^{1}/2$ in. square, with flaps from $^{3}/_{4}$ in. to 1 in. wide. The flaps may be arranged as shown in Figs. 5 and 6.

When the corners are cut out as shown in Fig. 2, the covers are stitched on a corner-staying machine, using a stitch with its crown bent at an angle of 90 deg., one leg being clinched in each flap. The driver is cut out in the center to accommodate this and a moving mechanism brings the flaps tightly together and clinches the legs of the staples flat against them. The arm of the machine is also shaped in a 90-deg. angle. The operator sits in front of the machine and stitches the four corners in succession, frequently working at a rate of 15 or more covers a minute. The usual type of caddy cover is cut out at the corners, but the one shown in Fig. 6 is sometimes used.

Bottom stitching

A bottom stitcher is the same as a standard box stitcher except that there is no clincher arm; instead, there is a vertical post mounted on the base or frame. The post is $\mathbf{1}^{1}/_{2}$ in. to $\mathbf{2}^{1}/_{2}$ in. in diameter and the clincher is fitted into the top which is thus reduced to $\mathbf{1}$ in. to $\mathbf{1}^{1}/_{2}$ in. in diameter. The head of the post is adjusted up or down by hand, to accommodate different thicknesses of board and the post is usually constructed with a heavy spring inside, so that, if extra-heavy material is inserted without proper adjustment, the spring will give and the stitcher head will not be damaged by the strain. The post is hinged at the bottom, and when the foot pedal is depressed, it tilts forward to permit insertion of the box.

When small or medium-sized boxes are to be stitched, it is advantageous to have a type of bottom stitcher with a considerable opening between the top of the post and the head of the stitcher so that the operator can save time by placing the boxes in stitching position over the post without tilting the latter forward. The foot pedal is then used to set the stitcher in motion and a succession of stitches may be driven without stopping the machine.

When a large volume of containers is to be stitched at the bottom, duplex- or multiple-head machines are often used. Duplex-head machines have a single head arranged to drive two stitches at once, with the crowns in line and spaced $2^{1}/2$ in. apart. A short bar is placed on the top of the bottom post, fitted with two clinchers proply spaced. Multiple-head machines have either two fixed non-adjustable heads for repetitive work on one size of the box, or adjustable, narrow type heads.

Bottom stitching of slotted containers

More and more industries are turning to bottom stitching as the best method of fastening the bottom flaps of slotted containers before they are loaded. The box is held firmly in shape, with a secure bottom closure, while the goods are being inserted and the boxes may be assembled as needed. One of the advantages here is that a stitched container is never affected by moisture, which might weaken another type of closure. This is particularly important when filled boxes are to be stored.

Of the several conditions of bottom stitching met with, the more important are described below:

All flaps of case meet in center: This condition is met in all square containers or in containers especially slotted at the center. The box should be held firmly at both sides to keep it square and avoid any gap between the outer flaps. The stitches should not be over $2^{1}/_{2}$ in. apart and along the edges of the abutting outer flaps they are usually placed close to the edge. Stitches should be tightly clinched so that the inside of the box will be smooth. When stitching corrugated boxes, the container may be held at an angle to the machine, thus allowing the stitches to be driven diagonally across the corrugations.

Outer flaps meet, inner flaps not over 6 in. apart: The same method of stitching is used on slotted cartons which are not square, but in which the inner flaps are not more than six inches apart. No stitches are placed except where there are two thicknesses of board.

Outer flaps overlapped: Containers of this construction are much used in the shoe and other industries, and when stitched on a single-head machine, the center overlap (1 in. or more) is stitched first, the sides of the box being firmly held between the hands of the operator. The stitches are placed across the overlap first as the box is most easily held when the seam, or length of the box, is in the direction of the body of the machine. The stitches on the ends may be placed either in the same direction as those on the

seam or at a 45-deg. or 90-deg. angle.

Full overlap boxes: Boxes with the bottom flaps fully overlapped are often sealed with glue, but if they are to be wire-stitched, the overlap is usually cut down to 1 inch to save material, except where the case is very long and narrow and extra rigidity is wanted.

Double-head and duplex-head bottom stitching

When the outer flaps of the box meet and the inner flaps either meet or are not over 6 in. apart, double-head bottom stitching may be used. The heads are set so that one stitch will be driven just inside the end of the box and the other just inside the edge of the opposite inner flap. The ends of the clincher bar form guides for spacing the stitches from the side of the box. When one side is completed, the box is moved over on the post and the other two rows are placed.

The duplex-head stitcher, which drives two stitches at once, spaced $2^{1}/2$ in. on centers, can be used on all boxes, whether the outer flaps meet or overlap. When used on a box with the outer flaps meeting, the center seam is stitched first, one stitch at each side of the joint. In order to bring the stitches closer to the joint, instead of holding the box straight it may be held at an angle to the machine, and the stitches driven in diagonally. The ends of the box are then stitched, the stitches being placed in order, two at a time. When stitching a box with center overlap, it is easier to stitch the ends first, and then complete the center seam.

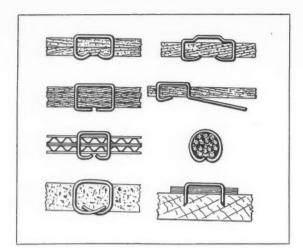
A skilled operator can do the fastest possible stitching with a duplex-head machine by holding the foot pedal down, which makes the machine operate continuously. The box is placed over the post and the top right side is stitched first. During the intervals between stitches the box is moved rapidly to the top left side, the bottom left, etc., and the foot pedal is not released until all the groups of two stitches have been placed.

In single-head stitching, one operator can complete three to six boxes a minute; with a duplex- or double-head machine this output may be increased at least 75 per cent. Duplex-head stitching is widely used because it is adaptable without adjustment to all sizes of boxes and for all flap constructions, and is much faster than single-head stitching under average conditions.

Top stitching

A standard top stitcher is a box stitcher which has a thin steel blade with the clincher set in the end instead of the solid clincher arm. This blade anvil is made of forged steel, tapered toward the front to make it thin.

Filled containers are always stitched at the top, the steel blade or anvil being inserted under the flaps after



Illustrated above is the application of wire stitching to various types of work. Also shown are some of the different forms of staples readily available.

they have been folded down. As filled boxes are usually rather heavy, a work table fitted with ball bearings is provided, on which the box may be moved easily in any direction. The table is balanced by springs or counterweights and may be quickly adjusted up or down with a minimum of effort. The operator places the box on the table, moves it to proper position for the insertion of the blade, stitches the flaps and removes the case to a truck or conveyor.

The most efficient method of top-stitching involves the use of a table lifted by the motor on the machine. A special clutch connects the motor to the table-lifting mechanism and a separate double-action foot pedal is used to control it. When the back of the foot pedal is depressed, the table and case are automatically lifted till they meet a stop attached to the head which brings the table to rest at just the right level for the blade anvil to enter under the top flap. A touch of the toe to the front of the pedal lowers the table again after the top flaps have been stitched.

This machine can either be placed beside a conveyor system or made a part of it. A loaded case is moved to the table, raised by the power lift, stitched, lowered and pushed on to the discharge conveyor. This allows the operator to handle many more cases than by the old method, and it results in a minimum of physical effort.

In a small or departmentalized plant, another machine, a combination top-and-bottom stitcher, is very popular. This machine is equipped with both a blade anvil and table and a bottom post. In bottom-stitching, the table and anvil are swung out of the way; for top-stitching, the post is easily removed, without the use of tools.

Some practical uses of top-stitching, other than the sealing of regular slotted containers, are: stitching the ends of mattress cases; stitching the tops of cracker boxes and caddies (by inserting the blade anvil through

die cut slots close to the edge); sealing the ends of boxes for automobile bumpers, and other long boxes with a relatively small space at the ends.

Shopping bags

Box stitchers may be adapted to fasten the twisted fibre stock handles to shopping bags. The handle is shaped and placed in position with the two ends overlying the folded top of the bag. Two standard box stitches are used at each end to hold the handle to the bag. Gages are added, and the bottom of the driver has a round groove cut in it which fits over the handle of the material. A neat-appearing and securely fastened job results.

Closing of bags

The closing of filled paper bags by stitching is common practice with many manufacturers. When the bag is made of heavy material, a standard box stitcher is used. The top of the bag is either folded over once, or a double seal fold may be used, and two or more stitches are inserted. This process is used for bags containing coal, chemicals, fertilizer, seed, and other products. If the bags are very heavy, the work is best done on a machine with a horizontal stitcher head, instead of driving the stitches vertically as usual. A table equipped with rollers is placed under the stitcher, or a regular conveyor is used, on which the bags stand with the flaps at the right height for closing.

Portable bench stitcher

Portable stitchers, easily carried from one job to another, have proved particularly useful for the stitching of filled paper bags, containing potato chips, crackers, noodles, and other products. The top of the bag is inserted below the driving mechanism and an automatic trip activates the solenoid which causes the stitch to be driven. These machines may also be used for attaching articles to cards and for making small boxes.

Stitching through sheet steel

The development of specially constructed stitchers for penetrating sheet steel originated through a need for such a method in the automobile industry. Such machines are now standard equipment and have a variety of uses: to attach weather stripping; to attach molding; to fasten metal rims on fibre drums; stitch metal handles to drums; and for use with many other products that formerly were fastened by riveting.

Special arms and guides can be provided to facilitate the placing of stitches in recesses or on rounded surfaces. When it is essential that the crown of the staple be concealed, as in attaching upholstery to metal frames, the driving of the stitch may be so controlled that the staple is buried beneath the surface of the work. Although the stitcher may be driven continuously, non-repeating clutches have been developed which facilitate the even spacing of stitches and permit only one stitch to be driven each time the foot pedal is depressed.

Fibre shipping drums

by R. W. Lahey

IBRE drums are used for packing valuable powdered products that require maximum protection from contamination and where the dispensing advantage of the full open head is of importance. Certain other materials to be protected from moisture can be safely packed in moisture-resistant fibre drums. Included in these substances are molding powders, pharmaceutical chemicals, rubber accelerators, cleaning powders, poisonous insecticides, inflammable solids, C.P. chemicals, etc. The food industry has adopted the fibre drum for bulk shipments of ground coffee, cocoa, spice, powdered milk, powdered eggs, baking powder, salted nuts, certain grades of meats and fresh fruits. Fibre drums also provide adequate protection for rolls of transparent wrappings, sheetings and fabrics.

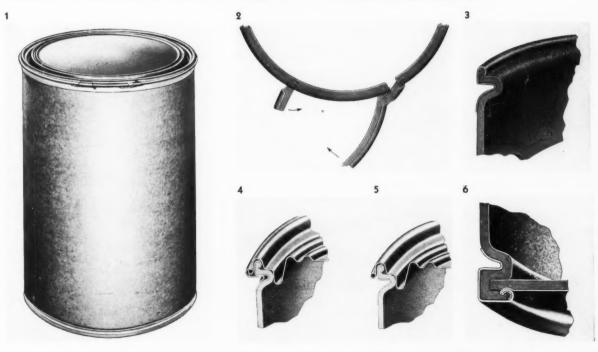
Fibre drums have recently been found to satisfactorily hold hot liquids which solidify upon cooling, such as rosin, resins, waxes, asphalt, etc. These containers are accepted for all types of transportation and have the advantage of light tare weight for parcel post, express, airplane, export, truck and other types of shipments.

There are two basic types of fibre drums available for the packing of powdered or granular dry products:

The first in importance has a convolutely wound shell consisting of several plies of paperboard wound on a mandrel and bound together with silicate-of-soda or other adhesive. There are various methods of attaching heads which consist of fibre, steel, wood and combinations of these materials. Some of the more important types are:

(a) Leverpak drum is supplied in sizes from 24 to 75 gal. holding up to 400 lbs. in content. It has a bottom of fibre trays held in position by a galvanized steel band around the bottom chime which is formed by hydraulic pressure. The full open head is made of steel and coated with a non-cracking or flaking resin coating. The chime of the drum head is reinforced by a galvanized steel band and formed by hydraulic pressure. The ring used to secure the cover is ingenious in design. Wire seals to prevent pilfering may be attached to the lever by means of eyelets. There is a creped fibre disc forced down under the cover of the drum to prevent contact with the metal. An alternate closure is a cover containing rubber gaskets.

1. Leverpak drum with sift-proof seal and pilfer-proof locking band device. 2. Lever for actuating locking band. Secondary lever insures positive lock. 3. Resilient full open top is re-inforced with heavy gage electric welded galvanized band. 4. Tight-fitting, lever actuated, heavy gage galvanized locking band holds cover in positive sealed position. 5. Heavy beaded re-inforced metal cover effects two point seal with inverted shoulder on inner surface of drum. 6. Resilient bottom chime reinforced with heavy gage electric welded galvanized bands. This type of construction maintains side wall and bottom of the fibre shipping drum in a hermetically sealed relationship.



PACKAGING CATALOG



ACME STEEL COMPANY

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ASSURES SAFER, LOWER COST HANDLING AND SHIPPING ACME Steelstrap



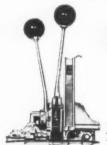
All types of products are shipped safer, easier and more economically with Acme Steelstrap...a method of flat strap rein-forcement for all kinds of shipping packs—cartons, boxes (wooden or fibre), crates, bun-dles and skids.

dles and skids.

Smaller packages can be bundled into single units with Acme
Steelstrap to speed-up handling . . . to prevent loss and pilferage . . . and frequently reduce express charges. On large ferage . . . and frequently reduce express charges. On large packs, Acme Steelstrap reinforcement often permits additional economies by reducing weight as well as time and material costs.

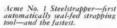


ACME TOOLS AND ACCESSORIES





Acme No. 9 Sealer—a weight, speedily operated ho sealing tool.



Acme N Stretcher—for tension-ing all standard sizes on pack-ages having flat strapping sur-faces. Acme tools and accessories speedily apply Steelstrap to the entire range of shipping packs. Precision machined and constructed, Acme equipment is built for service and is easily



Acme No. 2 Steelstrapper—for skid-loads and other heavy duty work, top or side application.

operated. There is a type for every strapping job. The one best suited for your needs is determined by the nature of the item strapped and by conditions under which products are packed.

ACME Unit-Load PRVCESS FOR CARLOAD AND L. C. L. SHIPMENTS



The Acme Unit-Load Process is a quickly applied and inexpensive method of bracing carload freight... straight and mixed loads... car doors . . . pool and stopover cars. Hundreds of shippers have taken advantage of Unit-Load benefits to make im-

portant savings.
Shipments are made "Bound to Get There" . . . held in the grip of strong steel bands . . . securely tensioned and sealed around units of freight. With ladings braced with Acme Unit-Load Bands it takes only one spin of each Bands, it takes only one snip of each strap to remove the shipment easily

strap to remove the shipment easily and quickly.

With this scientific flat steel band bracing procedure, shippers are able to eliminate unnecessary and costly bracing materials—reduce freight charges (less tare weight)—and lower labor costs. Damaged shipments and their resultant claims are virtually eliminated, and customer goodwill is protected.

ACME SilverStitch

FOR SPEED AND ECONOMY IN STAPLING

Stapling is faster-more boxes can be stitched per day with Acme Silverstitch. Uniform in temper, width and thickness. There are fewer stops for coil changes as Acme Silverstitch is supplied in one piece-five and ten pound coils. Acme Silverstitch is rustresisting - assures extra strong stitches that clinch and stay tight, and it's packaged for your convenience.



Acme stitching wire in colors (Colorstitch) adds eye-appeal to packages . . . can blend or contrast with printing on cartons ... same top performance as Silverstitch.

ACME SilverStitchers NEW, FAST, ECONOMICAL -CARTON STITCHERS



By using Acme Silverstitchers for carton stitching to replace old-time sealing methods, savings up to 50% in time and material are often effected. Production of stitched cartons is materially increased. Acme Silverstitchers assure a stronger carton because sealing by stitching has greater holding power . . . a better and neater job is provided. Teamed with Acme Silverstitch to function as a unit, Acme Silverstitchers give stitching satisfaction year after

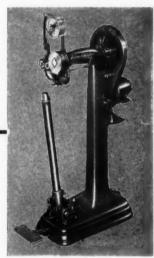
AVAILABLE IN 3 TYPES The Straight Arm Silverstitcher is a heavy duty stitcher designed for fast stitching of sides and ends of many types of packs. The Bottom Silverstitcher is designed for low-cost, smooth, positive bottom stitching. Combining the straight arm and bottom stitching units in one machine, the Combination Silverstitcher is the all-around stitching equipment.



Combination Silverstitchers



Straight Arm Silverstitchers



Bottom Silverstitchers

ACME SilverStitcher FEATURES

A DJUSTABLE single pedal control. Few moving parts mean lower maintenance costs. Vital parts are reversible. Low power consumption. Heavy duty construction for long service. Silent V belt drive. Wide comfortable foot-rest treadle. Resilient one-piece feed wheels. Handles two gauges of Silverstitch without adjustment. Conveniently placed starting and stopping toggle safety switch. Overfeed with adjustable spring

tension and unique wire friction plug provide constant and even flow of wire. Extra long life of main drive anti-friction bearing assured by use of Promet bronze. Mechanism guarded for maximum safety. Individual parts are precision made and are interchangeable. Friction brake spring maintains continual pressure on clutch hub and simplifies brake adjustments. Easey to operate..runs smoothly and quietly. Efficient..Economical. Guaranteed.

ACME SilverStitcher **SPECIFICATIONS**

STRAIGHT ARM SILVERSTITCHERS are available in three throat sizes—12", 20" and 30". These figures indicate the maximum carton depths which can be accommodated and represent the distance between the front of the frame and the clinching point. The size required is determined by the depth of the container or the nature of the article to be stitched.

Distance from floor to top of arm (clinching point): On 12" size—44"; on 20" size—44"; on 30" size—44".

Distance from top of base to top of arm {clinching point}: On 12" size-40"; on 20" size-42"; on 30" size-40".

Sizes of Silverstitch used—all standard sizes which include .014, .017, .020, .023; .060 x .024 and .060 x .0205.

Width of crown of standard staples: On 12" size $\frac{7}{16}$ ", on 20" and 30" sizes— $\frac{1}{26}$ ".

Motor: ¼ HP single-phase long hour duty; 110-220 volt, 60 cycle, A. C. Other voltage, current and phase required, available at slight additional cost.

Speed: Depending upon application and dexterity of operator, speed is set before leaving factory at any one of the following approximate number of staples per minute—170, 200, 230, 260 and 285. If speed is not specified, stitcher is set for about 230 staples per minute.

Diameter of silent action V belt driving pulley 14".

Floor space required: On 12" size—20" x 36"; on 20" size—22" x 44"; on 30" size—22" x 50".

BOTTOM SILVERSTITCHERS are available in two throat sizes—12" and 20". These figures represent the distance between the front of the frame and the clinching point in stitching position.

**Maximum dimensions of packs bandled on 12" size—24" x 24" x 40". Maximum dimensions of packs handled on 20" size—40" x 40" x 42".

Distance from floor to top of arm {clinching point}: On 12" size—44" :on 20" size—46".

Distance from top of base to top of arm (clinching point): On 12" size—40"; on 20" size—42".

Sizes of Silverstitch used—all standard sizes which include .014, .017, .020 .023; .060 x .024 and .060 x .0205.

Width of crown of standard staple 1/2". Width of crown of standard staple..../y".

Motor: '4 HP single-phase long hour duty; 110-220 volt, 60 cycle, A. C. Other voltage, current and phase required, available at slight additional cost.

Speed: Depending upon application and dexterity of operator, speed is set between 185 to 300 staples per minute. For a small added charge an adjustable variable speed attachment can be furnished. This will handle the complete range mentioned above.

Diameter of silent action V belt driving pulley....14".

Floor space required: On 12" size—20" x 38"; on 20" size—22" x 48".

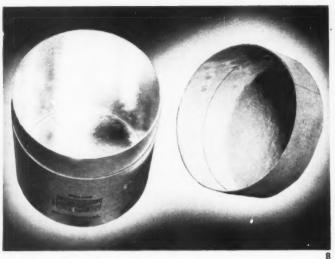
COMBINATION SILVERSTITCHERS are available in two throat sizes—12" and 20".

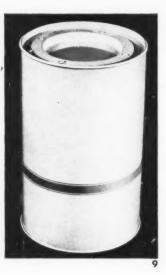
Width of crown of standard stable—16". Other specifications same as those

Width of crown of standard staple-1/2". Other specifications same as those

PACKAGING CATALOG







7. Stapak drum for domestic shipment of moderately priced dry bulk products. It is light and water-proofed.
8. Fiberpak drum with aluminum foil lining for shipping chemical and pharmaceutical products. 9. Strength and lightness makes it ideal for export. Keystone drum with steel head and bottom. Double seamed to the fibre shell.

This drum will pass the 4-ft. drop test required by Specification I. C. C. 21-A which is required for the transportation of certain dangerous articles.

(b) Fiberpak drum is made in a large number of sizes ranging from $\frac{3}{4}$ to 67 gal. and holding up to 400 lbs. of product. One end of the cylindrical shell is flanged inward and circular fibre discs are attached inside of the bent wall of the shell by stitching with flat wire an inch from the outer periphery. Other discs are then glued over the stitches to completely cover the metal stitching. Another shell is then forced down inside the outer shell and against the bottom disc. The bottom of the drum is dipped in paraffin for protection against water and a metal hoop is attached to provide easy rol-ling and prevent fraying. The drum is closed by a telescopic cover formed similar to the bottom. The cover is forced down over a sealing disc covering the mouth of the drum, and is held in place by sealing two plies of 60-lb. kraft gummed tape 3 in. wide over the joint of the cover and bottom shell. The outer bottom shell does not reach to the mouth of the drum so the cover can be taped on two surfaces with a flush joint. A twine tape cutter is available for ease in opening. drum meets the I. C. C. 21-A specifications and will pass the tests described in (a).

(c) Carpenter drum. Ends are formed of circular wooden discs about 13/16 in. thick which are flanged outward so they will set inside the cylinder and extend over the top of the shell. These wooden discs are forced into the drum over sealing discs which cover the openings. Steel hoops which have been hinged on one side are then placed over the tops and bottoms of the drums and nails are driven horizontally through holes in the hoops through the fibre side walls and into the wooden heads. This drum also complies with I. C. C. Specification 21-A and will pass the prescribed drop tests.

(d) Stapak drums are made in sizes ranging from 2 to 32 gal. to carry up to 200 lbs. net weights. They are made with metal bottoms and covers. The metal bottom is attached by wire stitches through the side of the bottom which extends over the fibre side wall and through the fibre cylinder. Pressure is applied

to the metal at the chime to force a tight grip of the fibre side wall. The slip cover is all-metal and it is held in place by metal sealing lugs attached to the side walls of the drum. These lugs pass through slots in the rim of the metal cover and are bent down against the drum side wall. Another manufacturer fastens the cover by punching split rivets through the cover and the side wall. There are several minor variations of this type, mostly as to methods used in securing the cylindrical body of the drum to the metal ends.

(e) Economy drum. This type has fibre bottoms and covers which are shaped by drawing moist fibre discs under pressure. They are fastened to the shell by the use of gummed bias woven cambric tape.

(f) Keystone drum. The steel head and bottom are double seamed to the fibre shell similar to the head construction of the steel drums. The head contains a friction cover of any practical diameter which is held by channel clips or turnbuckles bent over the flange of the cover to prevent slipping.

Containers of these constructions provide added protection against contamination and transmission of water vapor by use of an inner ply of aluminum foil, rubber hydrochloride sheeting, glassine, or other protective sheetings. It can be sprayed or dipped in paraffin or wax. Spray coating of the inside of the drum with flexible linings of rubber or synthetic resins are other possible treatments. Asphalt laminated board is most commonly used to retard the transmission of moisture vapor.

There is the advantage of a decrease in tare weight for the fibre drum. The following table shows a comparison which is approximately correct.

- 41 gal. all-fibre drum..... tare weight 17.5 lbs.
 41 gal. 24 ga. steel drum.... tare weight 23 lbs.
 41 gal. slack barrel..... tare weight 25 lbs.
- 2) The second type of drum is fabricated from either



The Seal of Shipping Safety!

Your product, shipped in a Gaylord Box, is protected by the famous Gaylord "Extra Margin of Safety"—the *reserve strength* built into every Gaylord Box that assures your product a better chance of arriving safe and salable.

In American industry, the name GAYLORD on corrugated or solid fibre shipping containers is a recognized seal of shipping safety.

Equally well known for extra quality are Gaylord cartons, bags and wrapping paper.

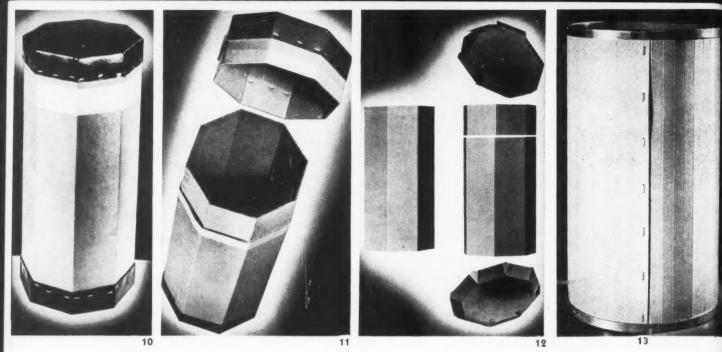


GAYLORD CONTAINER CORPORATION

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New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Seattle • Indianapolis • Houston • Los Angeles • Oakland Minneapolis • Dallas • Jacksonville • Columbus • Fort Worth • Detroit • Tampa • Cincinnati • Des Moines • Oklahoma City • Portland Greenville • San Antonio • Memphis • Kansas City • Milwaukee • Bogalusa • Weslaco • Greensboro

PACKAGING CATALOG



10, 11, 12. Self-contained corrugated container for chemicals. Due to its patented construction, top and bottom are stapled, eliminating possibility of sifting. By bringing both outer sections of the container to a butt and applying tape around circumference, no stress is placed on tape and the closure becomes strong.

13. Five-gallon cylindrical fibreboard ice cream bulk shipper. Shipped flat and erected just prior to use.

solid fibre or corrugated fibre board, the shell being formed into cylindrical, square, hexagonal, octagonal, or other multi-sided shapes by overlapping and wire stitching or securing by equally effective methods. The heads are attached by means of folding flanges of cylinders and heads secured by steel strapping, by wire stitching, by metal chime bands, etc.

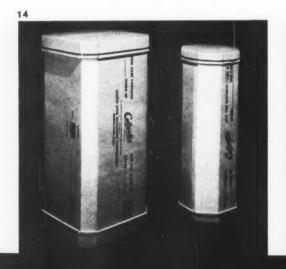
The first three drums described under 1 (a, b & c) have been approved for the shipment of such dangerous articles as some poisonous powders, inflammable solids and a few solid or dry explosives and they comply with I. C. C. Spec. 21A. This specification can be found in the Regulations for the Transportation of Explosives and Other Dangerous Articles and provides complete specifications as well as descriptions of required tests. It authorizes shipments of various net weights up to 200 lbs. in drums up to 55 gallon capacity.

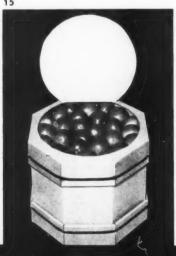
When these fiber drums are used for packing nondangerous articles, the containers must comply with Consolidated Freight Classification Rule 41 Section 11. Weight of contents vary up to 400 lbs. and maximum heights and diameters are specified for each group as well as thickness of fibre board, gage of steel used in bottoms and heads, and thickness of wooden heads.

These drums resemble in strength the well-known fibre boxes rather than compare in strength with steel containers as is the case for the first group. Some of these containers are shipped flat and set up by the user.

Fibre drums have the advantage of always presenting an attractive appearance. Long storage of steel containers often results in corrosion and failure of the coating. This is greatly accelerated in moist climates and in locations where chemical fumes are prevalent. Great strides have been made in decorating fibre drums. They can be spray painted in any desired color or combination of colors. More recently, a printing press has been adapted to the printing of attractive designs on the cylinders of these drums.

Credits: Photos 1, 2, 3, 4, 5, 6, 7, 8 The Container Co. Photo 9 Keystone Drum Co. Photos 10, 11, 12 Atlanta Paper Co. Photos 14, 15 Gaylord Container Corp. Photo 13 National Folding Box Co.





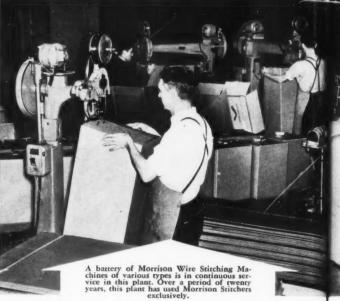
14. Three - piece corrugated board drum adapted to the shipment of heavy leather goods. 15. Three-piece corrugated drum. Lid and bottom are held together by wire straps.



Morrison Wire Stitchera







MORRISON STITCHERS meet

Advantages of Wire Stitching

STRENGTH of wire stitched fibre containers averages 200% greater than obtainable with adhesives or tape. Wire stitched containers are pilferproof and seals can not be weakened by moisture.

ECONOMY of wire stitching is insured by low material cost (wire stitches cost from 3c to 5c per M); relatively low labor cost (wire stitching saves up to 50% on labor expense compared with other methods of sealing); wire stitching eliminates setting time (as required when adhesives are used).

VERSATILITY: Any type or size of fibre container, any construction of flaps, any kind of corrugated or solid fibre board is within the scope of applications of MORRISON Wire Stitchers. In addition, thousands of articles can be carded, assembled and wire stitched to wood, sheet metal, fibre, plastics, etc., at an appreciable saving of time and material cost.

Morrison Wire Stitching Machines

The 15 standard models of MORRISON Wire Stitchers include bottom stitchers, top sealers, combination top and bottom sealers, side seamers and arm machines. Various machine sizes and throat depths blanket the complete range of requirements.

Machines are furnished with any one of 15 different speeds, 150 to 500 stitches per minute. 290 or 335 R. P. M. recommended. Variable speed drive optional.

MORRISON Wire Stitchers are of rugged construction. Formers, drivers, supporting shoes and other parts subject to wear after hard service are quickly accessible and easily replaced at minimum cost.

MORRISON Wire Stitchers are designed and engineered for easy operation to eliminate the need for highly skilled labor. Every detail is incorporated for the convenience of operators. Adjustments to varying job requirements are simple and easy to make.

All MORRISON Box Stitching Machines are equipped with the exclusive TYPE-SL Stitching Head illustrated and explained at the right.







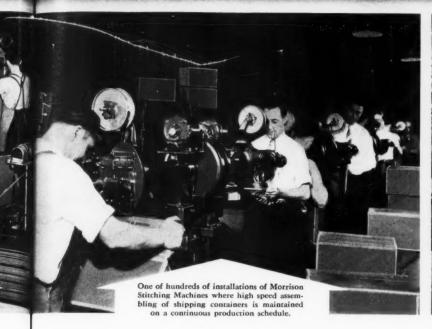
Features of the Morrison SL Head

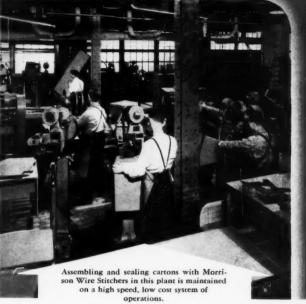
Illustration at left shows the MORRISON Type-SL stitching head with feed and mandrel blocks removed to expose the face plate. Removal of four socket-head screws frees the face plate and makes all parts quickly accessible.

Rear view of wire feed block shows simplicity and accessibility. Practically the entire feeding and cut-off mechanisms are contained in this one block which is easily removed from machine by loosening a single hand screw.

Rear view of face plate shows simplicity of construction and quick accessibility of all working parts. Former slide is raised and lowered by independent rollers actuated by the double profile cam. Two compression springs actuate the exclusive, new-design free-operating shoe.

SEYBOLD DIVISION, Harris · Seybold · Potter · Co. 8





all carton sealing requirements

Types of Morrison Wire Stitchers



Arm Stitcher

Model SLA with 15¾" Throat Depth Model SLB with 25¾" Throat Depth Model SLC with 33¾" Throat Depth

USES: These machines are widely used for suit boxes, telescope boxes, set-up boxes, three-piece boxes, carding, assembling, and a wide range of special applications.



Bottom Stitcher

Model SLH with 1534" Throat Depth Model SLJ with 2534" Throat Depth

USES: In addition to their standard use for stitching bottoms or corrugated or solid fibre containers, these machines can be fitted with auxiliary arm to make a combination Arm and Bottomer thereby extending their scope of applications.

Top Sealer

Model SLM with 253/4"
Throat Depth
Model SLP with 333/4"
Throat Depth

USES: These machines are designed for fast top sealing of slotted containers of either corrugated or solid fibreboard. Under certain conditions, both tops and bottoms can be sealed after packing. Machines are equip-ped with blade anvil arm and quickly adjustable roller top table as illustrated.

Where both standard bottom stitching and top sealing operations on the same machine are required, the Morrison Combination Units SLQ and SLR, illustrated on the next page, are designed for those requirements.



SALES AND SERVICE

next page for names and locations of Distributors of MORRISON WIRE STITCHING MACHINES. These distributors maintain fully equipped and experienced sales and service organizations qualified to give you expert advice on the correct selection, application and maintenance of MORRISON WIRE STITCHERS.

SEYBOLD DIVISION: Harris-Seybold-Potter Co. 858 Washington St., Dayton, Ohio

858 Washington Street, Dayton, Ohio, U.S.A.





T,

Morrison Combination Top and Bottom Sealer

Model SLQ with 253/4" Throat Model SLR with 333/4" Throat

This type of machine is designed for both standard Bottom Stitching and Top Sealing of corrugated and solid fibre containers.

The view at left shows the machine set up for Bottom Stitching, with the blade anvil folded down, the counterbalanced roller table folded up and the clincher post in position.

The view at right shows the machine set up for Top Sealing, with the quick-acting counterbalance roller top table down, ready to receive the box. Folded top flaps slide over the blade anvil arm for stitching.

Hand-Operated Side Seam Stitchers

(illustrated at left)

Model SLE with 25¾" Throat Depth Model SLE with 33¾" Throat Depth Model SLG with 45" Throat Depth

These machines for hand operation are built with either straight head or 45° angle head, with angle head faced to the right.

Automatic Side Seam Stitchers

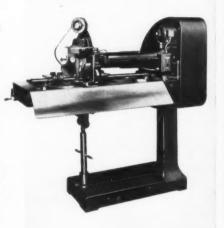
(illustrated at right)

Model SLS Morrison Automatic Side Seam Stitcher stitches the side seams of corrugated and solid fibre boxes with uniform stitch spacing at high speed and low cost.

This machine is practically unlimited as to the size of box it will stitch. It stitches boxes as fast as the operator feeds them. Quickly adjustable for change of set up, it is profitable for short as well as long runs. Accurate spacing determined by machine itself. Ask for special catalog folder which completely explains this outstanding machine.

The Morrison Model SLX Lift Table is available for use with the Automatic Side Seamer. This table handles a high stack of blanks directly from the loading conveyor and maintains the level of the top blank at exactly the proper height for most convenient folding and feeding. Idle machine time is reduced by longer periods between refills, operator fatigue is reduced by eliminating necessity for lifting blanks to feed, and production is greatly increased.





SPECIFICATIONS: MORRISON STANDARD STITCHING MACHINES

Model	Type of Machine	Actual Throat	Stitch to Floor	Overall Length	Shipping Weights		BOXED FOR	EXPORT Cubic	Code
	•	Depth	Distance	x Width	Net	Crated	Weight	Feet	Come
SLA	15" Arm	153/4"	45"	39×17	470	650	750	44	Nibble
SLB	25" Arm	253/4"	45"	49 x 17	550	740	840	65	Nicety
SLC	33" Arm	333/4"	45"	57 x 17	750	960	1080	92	Niche
SLE	25" Side	253/4"	45"	57×36	620	820	920	65	Nickel
SLF	33" Side	333/4"	45"	65 x 36	840	1060	1180	92	Niece
SLG	45" Side	453/4"	45"	77 x 36	1100	1400	1560	125	Nightcap
SLH	15" Bottom	153/4"	45"	41 x 19	580	760	860	44	Nimble
SLJ	25" Bottom	253/4"	45"	51 x 19	660	850	950	65	Nimrod
SLK	15" Arm & Bottom	153/4"	45"	41 x 19	600	780	880	44	Ninny
SLL	25" Arm & Bottom	253/4"	45"	51 x 19	680	870	970	65	Nipple
SLM	25" Top	253/4"	53"	55 x 28	1200	1400	1520	95	Nitrate
SLP	33" Top	333/4"	53"	63 x 28	1380	1600	1740	105	Noah
SLQ	25" Combination	253/4"	53"	55 x 28	1295	1495	1650	95	Nocturne
SLR	33" Combination	333/4"	53"	63 x 28	1480	1700	1900	105	Noddy
SLS	Automatic	See special	folder cover	ing this type	of machine.				

Note: Electric trip mechanisms for all models of Morrison Wire Stitching Machines are furnished as optional equipment.

The Morrison Electric Solenoid Trip has important advantages, especially for side seamers and stitchers used for extremely large work. Complete details sent upon request.

SEYBOLD DIVISION: Harris-Seybold-Potter Company 858 WASHINGTON STREET . DAYTON, OHIO

SALES AND SERVICE

E. P. LAWSON COMPANY, INC. NEW YORK CITY . . . 426 W. 33rd ST.

CHAS. A. STRELINGER COMPANY DETROIT . . . 149 E. LARNED STREET CENTRAL SALES DISTRICT DAYTON ... 858 WASHINGTON ST. CHAS. N. STEVENS COMPANY, INC. CHICAGO ... 112 W. HARRISON STREET HARRY W. BRINTNALL COMPANY

SOUTHERN SALES DISTRICT ATLANTA 120 SPRING STREET, N. W.

HARRIS-SEYBOLD-POTTER (Canada) LTD.
TORONTO AND MONTREAL

MORRISON WIRE STITCHING MACHINES

LL metal containers of 10-gal. capacity and larger are classified as "drums" and include both single trip and returnable (multiple trip) packages.

Returnable drums are of rugged construction, built to withstand excessive transportation abuses and for long life. They are manufactured in sizes of from 10 to 110 gal. in capacity. These drums are fabricated to meet the individual requirements of each product to be shipped in them. They are especially designed to cope with the chemical and physical characteristics of the product, to withstand any special transportation abuses to be encountered in that service, and to provide for the safety and convenience of the men who fill, handle, empty and clean the returnable metal shipping drums.

The majority of these containers are fabricated from black steel sheets which may be sheet or "hot dip" galvanized, tin dipped, or terne plated, if coatings are required. They may be lined with rubber or lead bonded, and some containers are lined with light gage chrome nickel or aluminum sheets. Drums are also made of solid aluminum, chrome nickel, monel metal and nickel. This provides a wide range of choice where it becomes necessary to guard against corrosion or contamination.

Returnable metal drums are made in both the full open-head and "tight" type. The open-head drums are used largely for dry or semi-dry materials and are popular for carrying food products such as shortening and oils, pigments, lacquers, heavy oils and pastes, nitrocellulose cotton wet with water or alcohol, etc. The covers of these drums are usually held in place by a metal ring with a lever or bolt for tightening.

The tight drums have screw plug openings which vary from $^3/_4$ to 2.3 in. in diameter. Proper specifications for these openings will lengthen the life of these containers. Forged steel fittings are recommended and they should be welded into the drum. Ordinarily, U. S. pipe thread is used, but use of the jumbo or acid thread will add to the life of the drum if it is intended to carry corrosives. Complete drainage is desirable and any opening which will prevent this should be questioned.

These packages are fabricated in the bilged (or barrel) and straight sided types. Manufacturers of the bilged barrels claim that the arched construction stiffens the sides and provides greater resistance to severe blows. It has only a small contact with the floor and therefore it can be rolled, turned, and up-ended easily by one man. The tare weight is less.

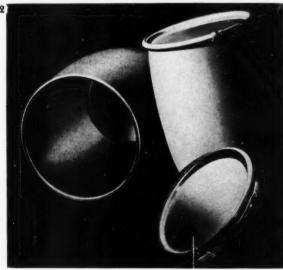
On the other hand, it is claimed for the straight sided type with the "I" bar hoops that they are easy to roll and can be placed on end readily as the rolling hoops extend about $1^{1}/2$ in. from the shell. The rolling hoops absorb shocks without transmission to the drum shell

and it is claimed that lighter gage metal can be used in the shell construction.

There are two basic types of bilged barrels. One is a cold drawn seamless drum and the other has a butt welded body seam with bottom either welded or brazed to the body. The inside bottom crevices are closed by fillet welding. This latter type can be made of lighter metal than the one piece cold drawn type, as there are limits to the machinery available for drawing steel. Advantages of the seamless type are added strength and an inner surface which is entirely smooth and without crevices to complicate cleaning.

Straight sided drums generally have welded body seams with double seamed or welded heads. Reinforcing chime rings are generally used to cover the head joints.





 Hackney full removable head bilge barrel showing mechanism of the ring and lever closure.
 Hackney seamless bilge barrel. Note smooth inner surface.





3. and 4. The Ringlox bilge barrel has a butt welded body seam with bottom either welded or brazed. This is a returnable container and is fabricated from 13-gage steel shell with heavier bottom and cover. 5. Acid drum—55 gal. capacity made of 14-gage steel with double seamed or welded heads and reinforced with chime rings.

"I" bar rolling hoops are attached by tack welding to lugs which are in turn tack welded to the drum. Expanded beads on both sides of the hoops are not recommended as they prevent complete drainage.

One type of drum is fabricated from two cold drawn seamless cups which are welded circumferentially, just off the center of the cylinder of the drum. The chimes are protected by foot rings welded around the periphery at each end. Drums made in this manner have the advantage of no head seams. This provides added strength and permits more thorough and inexpensive cleaning.

Returnable drums, larger than 55 gal. in size have been losing favor with shippers because of the excessive weight of the filled container. They are not only difficult to handle, but are also hazardous.

The interior of the tight headed drum should be shaped for complete drainage. Any crevices in the chimes or depressions in the shell of the drum at the rolling hoops or at the spud will prevent proper drainage. The drum which cannot be entirely emptied is not only unsatisfactory to the customer, but the dangers of de-

terioration of the drum through the corrosive action are liable to have serious consequences during use.

Every shipper must choose between returnable drums and one time shippers. This problem is usually approached with reluctance as it involves dealing with many intangible items which must be evaluated in terms of investment, cost, and convenience to shipper and customer. No general rule can be followed, for the answer depends upon such questions as the physical and chemical characteristics of the product, whether the average haul is long or short, whether shipments consist of a large number of small ones or a small number of large ones, etc. Other items to be considered are depreciation, repairs, cleaning, maintenance, transportation cost out and return, billing and accounts, and cost of stock records.

Returnable containers for dangerous articles must meet one of several I. C. C. specifications depending on the product to be transported. The 5 and 42 series specifications are for liquids and the 6 series specifications are for dangerous materials of the solid type. C. F. C. Rule 40, Sec. 5C governs the construction of returnable drums for transporting non-dangerous articles.

Light gage drums

Light gage drums may be authorized only for a single trip or they may be used in returnable service. Some liquids, classed as dangerous by the I. C. C. Regulations for the Transportation of Explosives and Other Dangerous Articles, may be shipped in single trip containers meeting I. C. C. Specification 17C, a 16-ga. drum and I. C. C. 17E or 17X, 18 ga. drums, depending on their degree of hazard. Liquids which are not classed as dangerous may be transported in drums of the constructions specified in C. F. C. Rule 40, Sec. 5C without limitation as to the number of trips these drums can make. This rule does not provide for "one time liquid shippers."

Many dry materials, classed as dangerous, may be shipped in single trip steel drums complying with I. C. C.





Conservation

IS AN IMPORTANT PART OF THE ALL-OUT EFFORT

FOR VICTORY

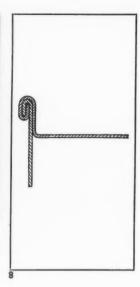
Conservation of materials in the field of shipping containers can result in waste . . . unless applied by experts.

For years our packaging engineers have been developing, through research and design, shipping containers that conserve materials ... yet do the job of safely carrying the product without damage.

At no time in American history has the need been greater than for organizations like Inland.







6. Hackney two piece drum with circumferential weld at center of cylinder. Chimes are protected with toe rings instead of conventional chime reinforcing rings. 7. A 55-gal. 18-gage drum used for transporting liquids. Note corrugations in cylinder, expanded rolling hoops and mechanically pressed in openings. 8. Double seam construction for locking heads and cylinders of metal drums.

Specifications 37D, 37E, 37F, 37G, 37H, as required by the Regulations. Drums for non-dangerous dry materials must be fabricated in accordance with C. F. C. Rule 40, Sec. 5C. This rule provides the minimum gage required for returnable drums and there are no minimum steel requirements for single trip containers other than that the minimum and maximum capacities listed for returnable drums must be observed and they must be embossed "S. T. C."

Drums of 18 gage and lighter, for liquids, have welded side or body seams. Electrically flash welding is considered best because the flash can be trimmed and a smooth surface is available for painting and decorating. Heads are attached to the bodies by double seaming which forms a tight joint. A sealing compound is squirted into the seam to close up any cracks left by the bending of the two metals. Animal glue or a rubber sealing

compound is ordinarily used. Some liquids are solvents for these compounds and in such cases may find their way around the metal and a leak will result. This operation is one of the most important in the fabrication process because if the metal is not driven home properly, there will be a weak spot at the most vulnerable point.

Rolling hoops in this class of drum are expanded into either a "V" or "U" shape. Many drums have corrugations rolled or expanded in the bodies in the areas between the rolling hoops and the heads. It is claimed that these corrugations stiffen the sides.

Openings are generally of the pressed-in variety. The spud or collar usually has a rubber or asbestos gasket between the body sheet and flange. The plug is of the ordinary screw thread variety, using a gasket of rubber or other effective material. Cap seals are popular because they are tamper-proof and afford an additional seal. If the spud extends into the drum it should have ports drilled into it to provide complete drainage.

Light gage drums for dry materials are usually fabricated from 18 gage to 28 gage steel. Drums of the lighter gage material are usually used to pack a molten material which solidifies and thereby supports the drum. Usually, 26 gage drums are satisfactory for 100-lb. loads;

9. Mechanically inserted 2 in. flange with bung and cap seal. The cross section shows the construction of this opening attached to the drum sheet. The cap seal before it is attached is shown in Fig. 10 and when attached to the opening, in Fig. 11. Cap seals are popular because they are tamper-proof and afford an additional seal.







76 PACKAGING CATALOG



(Above) The HELLER "Red Head"
Standard of Them
All! A variety of attachments adapts this "Red Head" to any stapling job.

From coast to coast HELLER
Staplers are speeding up defense orders, getting shipments out ahead of time, conserving labor and saving money.

Due to priorities restrictions

Due to priorities restrictions and material shortages, more and more firms are turning to new methods of packaging, fastening and shipping—and to the speed, flexibility and economy of HELLER Staplers.

There are hundreds of HELLER models to choose from.

(Right) DeLuxe Bottom Stapler. Construction features make this machine ideal for stapling carton bottoms. Three times faster than sealing with glue, tape or silicate.

(Below) Helping speed America to victory—HELLER DeLuxe Bottom Staplers stitch bottoms of shell cartons—as well as hundreds of other defense stapling jobs.

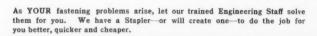


Shown at right is the stapling of seat covers for Army "Jeep" cars—one of the many defense uses of HEL-LER Staplers.

(Left) Foot Side Stapler. Where two hands are necessary to handle carton, and maximum speed is required, this foot operated stapler does a perfect job, stapling sides and ends. Can drive up to 200 staples per minute.







The HELLER Co. 4312 Euclid Ave. Cleveland, 0.











24 gage for loads up to 200 lbs. and 22 gage up to 350 lbs.

These drums are usually made with the Gordon Lock or lap welded side seams, of which the latter is the stronger. Hook seams are occasionally used but they are inferior to the other two types. Spot welding at intervals along the hook and the Gordon Lock seams adds to their strength. The heads are seamed by double seaming of exactly the same construction as for liquid drums. Sidewalls are stiffened by expanding corrugations of varying size and number in the cylinders.

Closures

The variety of closures which have been devised for these containers are too numerous to cover in detail. The most popular types are described below:

The friction lid is used most often. It is a cheap and effective closure when the bearing surface between the flange of the drum and the cover is sufficient to provide a tight fit. A lid with a depth of 5/8 in. is adequate. Friction lids are used in openings of from 4 to 15 in. in diameter—of course, the smaller the opening the stronger the drum and the less likelihood there is that the cover will pop out.

These covers are sometimes fastened in position with three or more turnbuckles. Usually a small hole is drilled in the side near the end. The purpose of this is to wire the turnbuckles in position over the cover so that transportation abuses will not move them. A lead seal can be applied to the wire to assure the user that the container has not been opened.

Covers are also reamed or expanded to hold them in position. If this fastening is desired, the flange of the cover should extend below the flange of the drum head. The expanded cover makes an extremely tight closure but when it has been removed, the cover will not form a tight fit—in fact, it is difficult to replace.

The bolted cover is another popular type. This opening is principally used in drums holding pastes and other semi-liquids, powdered or lump materials where large openings in the container are desirable. The bearing surface is between the flat head of the drum and the flange of the cover with a gasket between them. Nuts are attached to the under side of the head by welding. Machine screws are used to fasten the cover which makes a tight closure and for large openings is stronger than the friction cover. There are, of course, several minor variations of this opening to serve special conditions.

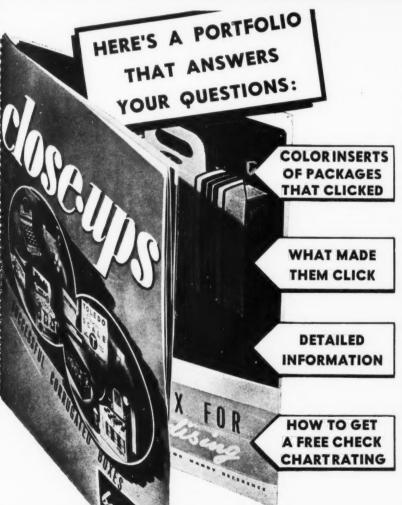
12 and 13. Full open head 55-gal. Quiklox drum with ring and lever closure. This 18-gage steel drum is usually used as a single trip container. 14. Full open head drum with ring and bolt closure. 15. Cross section of Gordon lock side seam or lap welded seams.

78 PACKAGING CATALOG

WHAT do you know about corrugated boxes?

HOW do you know you have the best box for the job?

WHY not see if your packages can be improved?



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that corrugated shipping boxes can be converted into colorful, attention compelling die-cut counter displays that make shoppers stop, look and buy?

that corrugated shipping boxes can be printed with all-over patterns, with modern designs, in a range of colors? That stock designs include linen weave, tapestry, pine needle and other patterns? That corrugated shipping boxes can have distinctive embossed surfaces?

that patented Duplex shipping-display boxes move more merchandise—increase profits—at point-of-sale?

that you can get expert package design and package engineering service without cost or obligation . . from the H & D Package Laboratory?

analysis and an impartial rating of your present shipping box by asking for an H & D Check Chart Rating? That this free service may point the way to greatly increased package effectiveness?

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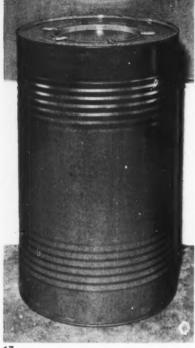
4239 DECATUR ST. • SANDUSKY, OHIO Please send me, free, the portfolio,

"Close-Ups of Successful Corrugated Boxes"

NAME

TITLE





16. Lug cover drum for greases and other semiliquids. A sealing tool crimps the lugs under the curled portions of the head. 17. Drum with a 12-in. friction lid which is held by 6 turnbuckles. This is a cheap and effective closure when the bearing surface between the flange of the drum and the cover is sufficient to provide a tight fit.

The full open head has assumed a position of importance in the drum closure field. The ease of emptying this container has quickly made it popular. The head is formed to fit as closely as possible on a curled drum chime. A gasket is fastened to the head to bear on the rounded chime. The head is held with a ring which can be drawn tight with a lever or bolt. Many different devices have been used. The heads are sometimes made of a heavier metal than the rest of the drum and this usually applies to the ring as well. This closure is invariably the customer's choice, but it will not withstand the same abuse as the smaller closures.

The screw lid is a popular closure for carbide drums. The effectiveness of the seal, naturally, is limited, as threads cannot be effectively pressed into metal of the gages in question. There is a gasket on the flange of the cover and the bearing surface is between the drum head and the cover flange, depending on tight screwing for pressure. The lid has a fin to provide ease in tightening.

The lug cover drum is in demand for certain purposes.

A sealing tool crimps the lugs under the curled portion of the head. The user must pry out each lug with a screwdriver to open the drum.

In the choice of a drum opening, the shipper has an opportunity to perform a real service to his customers. There are several factors to be considered, such as the ease of opening and the necessity for re-sealing, the ease of emptying and the ability to completely reclaim the contents. The flange in the opening extends downward from $^{1}/_{2}$ to 1 in. and this prevents complete dumping. This difficulty is often lessened by locating the opening off center and as close to the chime as possible. The manner in which the customer uses the product is the guiding factor in this choice.

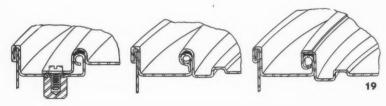
Drums for both liquids and dry materials may be "hot dip" or sheet galvanized, tin dipped, or lacquer lined to prevent contamination. There are many lacquers available for lining welded side seam drums and which must be baked at high temperatures. These linings have enabled the use of steel containers for many materials which formerly had to be packed in wood, glass, etc.

Drums can be painted in one or two colors and can also be printed, lithographed and even embossed. A proper choice of colors will result in distinctive and attractive containers.



Credits: Photos 1, 2, 6 Pressed Steel Tank Co. Photos 9, 10, 11
Ricke Metal Products Co. Photos 7, 14, 16, 19 Niles Steel
Products Division, Republic Steel Corp. Photos 3, 4, 5, 12,
13, 18 Stevens Metal Products Co. Photo 17 Atlas Steel
Barrel Corp.

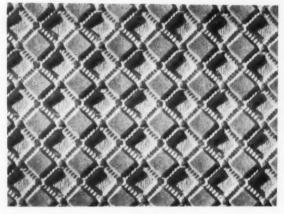
18. A 55-gal. drum made of 18-gage steel, generally used for transporting pastes and semi-liquids. 19. Left, drawing which shows the construction of the bolted cover; center, shows the lug seal; right, the ring seal cover.



Again in 1942-For Better Packaging SAFEGUARD and DECORATE YOUR PRODUCT!

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m ulky-Absorbent-Soft-Strong-In}$ Attractive Tints or Pure White.

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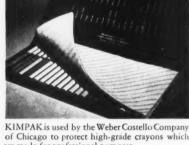


Zenith Radio Corporation relies on KIMPAK to safeguard its beautifully finished cabinets and finely engineered radio instruments.



Lightfoot Shultz Company of Hoboken, makers of fine soaps and toilet products, uses KIMPAK for

the packing of de luxe soaps.



of Chicago to protect high-grade crayons which are made for professional purposes.

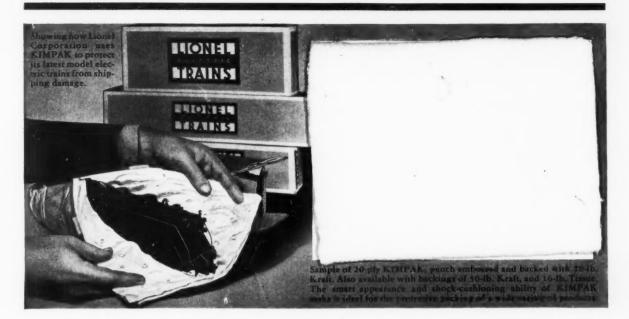


KIMPAK is chosen for the prorective and decorative packing of Holeproof Nylon Hosiery, popular product of the Holeproof Hosiery Co., Milwaukee.



How Stevens and Company, Chicago, uses KIMPAK to protect its fine gift packages.

KIMPAK comes in rolls, pads and sheets, in thick-nesses to fit every need.



KIMPAK* gives Product-Protection plus Extra Eye-Appeal!

WHETHER you ship your products only one mile or thousands of miles are all sands of miles away, they need the proved shipping protection of KIMPAK* to reach your customers safe and sound. Soft and resilient, KIMPAK puts a shock-absorbing cushion between your merchandise and the jolts and jars that come from rough handling en route.

The more exacting your requirements, the more you need KIMPAK. This shock-cushioning, flexible material won't scratch the finest finishes because it is so pure and clean . . . so free from dirt or grit. KIMPAK is now being used for the protective packing of almost every product you can think of . . . from fragile scientific instruments to heavy metal and wood furniture. Important, too, is the fact that KIMPAK can absorb 16 times its own weight in liquids, thus exceeding government postal regulations in this respect.

KIMPAK comes in rolls, pads and sheets of practically every size and thickness and provides an easy solution of

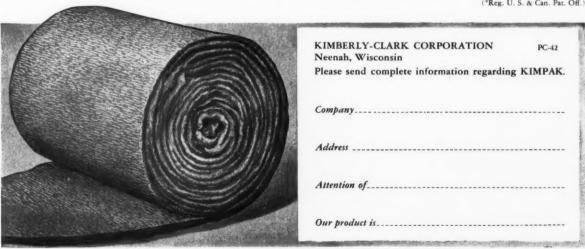
many different kinds of packing and packaging problems. There's a type of KIMPAK that is "just right" for guarding your product against breakage, chipping and chafing . . . to help prevent costly mars and scratches.

KIMPAK is a great efficiency booster in the shipping room. Employes like to work with it because it is so clean and pleasant to handle. And you will like it because it does away with fuss, muss and waste. Not only is KIMPAK as easy to use as a piece of string, but it is a real saver of time, work and money.

In addition to guarding your product against shipping damage, the rich, velvety texture of KIMPAK gives an extra lift to the good looks of your package and your product. And more eye-appeal means more sales-appeal.

Find out how KIMPAK can help to keep your profit margins UP by keeping merchandise damage DOWN. Send today for complete information. Mail coupon now!

(*Reg. U. S. & Can. Pat. Off.)



Protective pads and cushions

UST as there is a wide range of types of shipping containers and packages to choose from, so there is a wide range of types of protective pads and cushions available to the packing engineer. The same general rules apply in the selection and design of interior packing protection as apply in the selection and design of the shipping container.

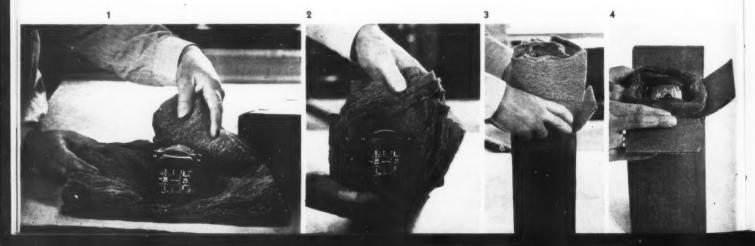
Simply stated, the material that will best perform the function of product protection at the lowest cost is the obvious material to employ. It is equally obvious that the matter of performance comes first in importance—cost second. All types of interior packing pads and cushions, sheets and wraps, from the corrugated board air pad to the excelsior pad, from loose excelsior, wood wool and shredded tissue to the softer paddings such as cotton, felt and, more recently, creped wadding—all have their logical places in the packaging picture.

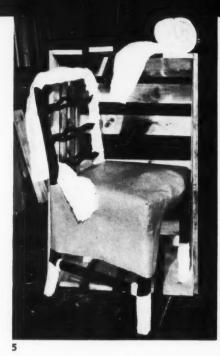
Creped wadding has made steady progress in its general adoption as a staple product in the packing field. It has many natural advantages. It is soft, clean, flexible, cushiony, easily cut and handled, available in many convenient forms, sheets, pads, rolls, in various thicknesses and with various backing materials. Because of its ready adaptability to the common-place as well as to the unusual packing problem, it contributes to speeding up the operation of packing and cuts costs on many jobs where formerly baser types of packing materials have been used. In effect, all packaging is the means of protecting products from some form of damage while in transit or storage on the way to or awaiting the time of use. The ultimate user has need of and has become accustomed to delivery of the products he buys in factory condition.

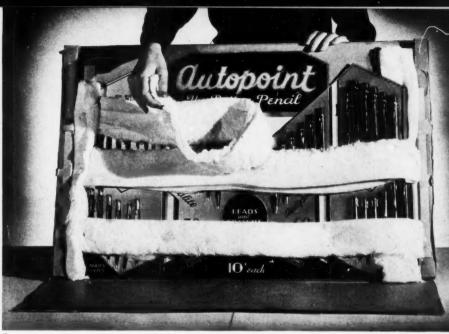
As products, new and old, are freshly packaged, new problems of protection arise. Almost all products need some interior protection other than a cleverly designed carton. Most carton designers recognize that and today they keep well supplied with and informed as to accessory materials, such as interior paddings, wraps and cushions of a protective nature. Among the many interesting examples of products recently using creped wadding for protection packing are: graded Michigan apples, artificial flowers, cake ornaments, fluorescent lighting fixtures, abrasives, rolls of metal foil, switchboard panels, electronic tubes, airplane and gun control instruments, airplane fuselage parts (such as wing ends, tails, struts, aelerons, etc.), flat silverware, polaroid glass, filters for color photography, artists' crayons, bar candy in wholesale containers, sheets of stainless steel, microphones, thermometers, advertising displays, box labels, transparent packages, transparent plastic sheeting.

Generally the need of interior packing protection is due to the fragility of the product's finish. Finishes of all types—varnish, lacquer, enamel, porcelain—are used primarily to protect the product itself from wear, moisture, stain, chemical and physical changes. Some finishes provide beauty of the product while protecting it; others merely preserve this beauty and add nothing to its eye-appeal. Paradoxically, these protective finishes themselves need protection. That is the function of protective pads and cushions. The thickness and size of protective pads or cushions are determined by a number of considerations: the nature of the product, the weight, protection of finish or structure, the type of packing container, the nature of the journey, and the method of handling or warehousing.

Four steps in the packing of an Aero Mixture Indicator Unit, an important aviation instrument, manufactured by Cambridge Instrument Co., Brooklyn, N.Y.: 1. Square pads of 1-in. thick creped wadding are used. 2. The instrument is carefully wrapped with wadding evenly distributed. 3. Wrapped instrument is inserted into tight-fitting corrugated shipping container. 4. Instrument is now suspended in a deep cushion of shock-absorbing wadding and is fully protected against all shocks received in transit.







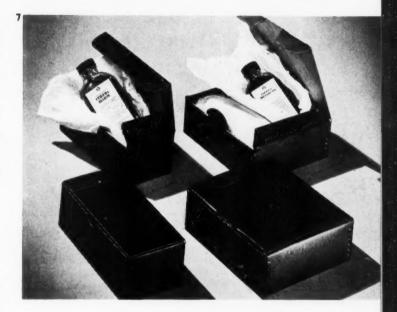
5. Furniture manufacturers are keenly conscious of the need for safety packing to protect their products from damage in shipping and handling. This ladder-back chair in mahogany, with hand-rubbed shellac finish, made by Old Colony Furniture Co., Boston, is an excellent example of the packer's art. All possible points of contact of the wood surfaces are carefully protected by creped wadding in a continuous strip wound around the legs and back. Kraft paper is wrapped over all before crating in open wood boxes. 6. Display Signs of Autopoint Pencil products are protected from breakage and disassembly by thick cushions of creped wadding which imbed the pencils and hold them firmly in place. 7. Smith, Kline and French pharmaceuticals are sampled to physicians in safety from breakage by heavy cushions of absorbent creped wadding.

In some cases the packing material is employed as a contact pad in conjunction with rigid interior packing for facing of corrugated pads or wood bracing members of wooden containers. In other cases it is applied in sheet form to cover wide areas of finished surface as a cushion protection from direct contact with the walls of corrugated or fibre containers. In others, particularly in the packing of small fragile articles, or in parcel post packing of liquids, it is used in thick blankets to swathe the product completely in a resilient cushion.

Used as a buffer between product finish and side or member of packing container, creped wadding provides the four essentials of a packing protection material:

- 1) Cushion to equalize the irregularities of the two opposing surfaces and thus eliminate press marking;
- 2) Reduction of surface "burning" through absorption within the padding of vibration in transit.
- 3) Surface smoothness that increases with pressure to reduce further hazard of "burning."
- 4) Conformability to surface, which prevents cinders or other gritty substances from becoming imbedded between finish and container walls.

Not so many years ago internal packing materials were

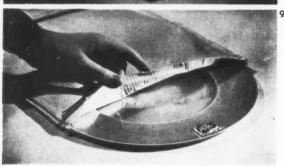


given but little attention. They were considered necessary evils, avoided where possible and used only as a last minute necessity. Today the public expects and gets its purchases delivered properly protected, attractively packaged, individually packed and minus cheap, messy packing material spreading over furniture and floors. That is "out" along with the cracker barrel and the late lamented horse and buggy.

The functions of interior protective packing design and materials used for the prevention of transit damage may be stated generally as:

- 1) Absorbing shocks transmitted to the product either from external blows received by the container or by concussion with each other when several products are packed in the container
- 2) Absorbing continuous vibration which all con-





8. Selected Michigan Apples, easily bruised, are protected by a thick blanket of creped wadding in this gift box of Hill Top Orchards, Hartford, Michigan. 9. Beautiful Kensington Ware plates are packed in individual bags lined with whipcord-embossed creped wadding which protects them in transit and delivers them to the buyer clean and unmarred. 10. Protective packaging of very delicate colored crayons by Weber-Costello, using 10-ply sheets of resilient creped wadding as a cushion and to prevent container scaring. Photos Kimberly-Clark Corp.

tainers are subject to in transit and which would be transmitted directly, with damaging effect, to the finish of the packed product.

3) Absorbing liquids from broken bottles or from leaking closures.

Eye-appeal in packaging naturally plays a most important role as a sales-display factor with certain consumer products of the luxury class of which cosmetics, confectionery, candles are examples—products that vie with each other for consumer attention in dressed up packages. Like all other important manufacturing operations, packaging of mass production items long ago progressed to the stage of engineering design and is now in the domain of the skilled technician. Because such packaging is a practical art, the factor of utility at all times governs the selection of materials employed.

In all packing design the engineer is governed by a great many considerations, including size, shape and weight of product, the construction and finish of the product, how many units must be packed in the container, cost allowance, handling, storage and transportation conditions, etc. He must then determine the type of container available and suited for the job. He chooses from solid wood boxes, wood crates, cleated fibre, solid fibre, corrugated board, etc. Equally important with the type of container is the method of interior packing to be employed. Here again he has a fairly wide choice, but the general divisions are simplified into the three methods employing internal protection materials:

Compression packing: Where the product is completely protected on one or more (in some cases all) surfaces with thick cushions of protective packing material that hold the product in place, prevent contact with other products within the container, prevent its contact with the inside walls of the container, absorb shock and vibration in transit, handling, storage, prevent breakage and surface damage.

Suspension packing: Where the product is suspended by bolting or is otherwise anchored to one interior wall of the container so that it is free from contact with all other walls. In some cases, protection padding of appropriate thickness is located at emergency points of contact with braces or internal framing members of wood containers or other type containers.

Combination compression-suspension packing: Where the product is protected on one or more or all surfaces by a thin sheet or wrap or protective padding, or where contact pads are placed on the braces or framing members to prevent direct contact of finish with the inner walls of the container so that rubbing and pressmarking of finish is eliminated. For many such containers the design favors lightness with strength, but the product packed is depended on to supply more or less of the rigidity of the package. The function of the protective packing material in such cases is to distribute so far as possible the weight of the contacting wall or brace or member over the greatest area.





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Distribution Service



Sealing with gummed paper tape

by J. D. Malcolmson

HE proper use of gummed sealing tape is a subject deserving much attention in the shipping room. It is only necessary to study the corrugated and solid fibre cases on any large shipping or receiving platform to see instances of defective tape sealing—boxes with torn, loose or improperly located tape. Often, containers which appear to be all right at first glance will reveal, on closer inspection, that portions of the tape are not adhered to the box but, are simply staying in place temporarily until the first impact or scuff tears them loose.

A test every shipping man should make is to take two or three containers that were tape sealed several days ago and strip off every possible bit of tape. If no blisters or unadhered spots are revealed, the job is perfect. More than likely, there will be a number of places where the tape comes loose with little or no effort even though it looked perfect originally. There is a right way and a wrong way to use sealing tape and many satisfied operators are not doing a good job, due either to improper moistening of the glue, or failure to establish permanent contact between the wet glue and the package surface.

Sealing a fibreboard container with gummed tape is not a hit-or-miss proposition. The correct method is the result of considerable research and experience, but even so is much simpler than some of the amateur methods sometimes used. Briefly, it resolves down to five basic points:

- 1) Learn the railroad, express and parcel post regulations thoroughly.
- 2) Use a good grade of gummed tape.
- 3) Moisten it thoroughly and adequately.
- 4) Apply it where it will do the most good with the least amount of tape.
- 5) Get contact—everywhere—between the tape and the box and maintain it until the glue sets.

Rules and regulations

Freight: The principal regulations are covered by Section 4(a), Rule 41 of the Consolidated Freight Classification. These call for 60-lb. kraft paper testing not less than 60 lb. Mullen or Cady. The tape must be at least 2 in. wide and must cover all box seams and lap $2^{1}/_{2}$ in. or more over the box sides and ends and must be firmly glued to all contact surfaces. The strips at the top and bottom of the end panels need not overlap. This refers mostly to slotted cartons. Section 4 also describes tape sealing for other styles of boxes.

describes tape sealing for other styles of boxes.

Express: These requirements will be found in Rule 18(t) of the Official Express Classification. They are the same as for freight except that the amount of tape to be used varies depending upon whether the inner flaps are more or less than 6 in. apart. (This reference to inner flaps used to be included in the freight require-

ments but was dropped some time ago.) Until recently the express rule also called for a reinforcing cross strip across the center of the top and bottom on certain boxes, but Supplement 11 did away with this cross strip.

Parcel post: While no tape sealing specifications are issued, the Post Office has ruled that domestic third or fourth class (parcel post) merchandise may be enclosed in sealed parcels bearing printed labels (not rubber stamps) which show the nature of the contents and name of the manufacturer, producer or shipper, and are endorsed "Postmaster—This parcel may be opened for postal inspection if necessary." This notice may appear on the address label, on a separate label, or it may be printed on the gummed tape which seals the package. The name and address of the shipper must also appear on the package.

All these regulations call for paper sealing tape—not cloth. Cloth tape would make a stronger seal but years ago the carriers learned that a thief could strip off a piece of cloth tape, remove part of the contents and re-seal with another piece of tape without leaving any traces. Paper tape, if properly adhered, cannot be removed without tearing either the tape or the box or both.

Certain dangerous articles, such as insecticides and powdered poisonous articles, which come under The Bureau of Explosives, are required to be sealed with gummed cloth tape when packed in corrugated and solid fibre boxes. Cloth tape is also used by the box manufacturers in joining the fourth vertical corner of a slotted carton. Sometimes this is clay filled cambric, sometimes "duplex" consisting of cloth and paper and sometimes "asphalt" tape where waterproof and odorless asphaltum is used as the duplexing adhesive.

Asphalt has certain objections which have been avoided by a grade of tape wherein a creped kraft paper is duplexed with a colorless waterproofing adhesive. The crepeing makes for great flexibility and in addition the tape has strings buried in the crosswise direction making it almost impossible to tear.

Paper and glue

Gummed paper sealing tape is usually made of kraft paper gummed with a good grade of animal glue. There is good gummed tape and cheap gummed tape and the difference in cost between the best and the cheapest, when applied to one sealed package, is infinitesimal. Yet this tiny saving may spell the difference between a good delivery and a bad order.

The quality of the kraft paper is judged by weighing, calipering, tearing and tensile tests. The glue is more difficult to evaluate and must be judged by the reputation of the tape maker and by its ability to moisten and set quickly and evenly. Hide glue has great strength, while bone glue speeds setting. For this reason, both are used, plus chemicals for increasing flexibility and deodorizing.

In an effort to standardize the minimum qualities of gummed tape, the Department of Commerce, in cooperation with the gummed tape industry, has developed simplified Practice Recommendation No. R 114-30 which reduces No. 1 kraft sealing tape to three standard weights —35 lb., 60 lb. and 90 lb. These weights are before application of glue.

The bursting test is also 35 lb., 60 lb. and 90 lb., respectively. For the 60-lb. case sealing grade, the tearing test is to be at least 118 Elmendorf units in the machine direction and 140 in the cross direction, while the tensile test (one inch wide) is to be 47 lb. in the machine direction and 27 in the cross direction. Standard roll lengths to be 800 ft. on 35 lb., 600 or 1000 on 60 lb. and 375 on 90 lb. Standard package to be 30 in. long (viz., 15 two-inch rolls) and 16 standard packages to constitute a standard case.

The government specifications do not define the glue nor the adhesive quality. This is because the sticking of glue is a somewhat complicated reaction. Gummed tape does not adhere simply because it is tacky and sticky as does medical adhesive tape. When moisture is applied to the glue surface of a strip of sealing tape, the glue dissolves in the water. The result is a flowable solution of glue in water and this solution soaks into the surface of the fibreboard box to which the tape has been applied. Then the water evaporates and the glue remains. Thus thousands of tiny fingers or anchors of dried glue are hooked under the fibres of the board.

Obviously the coating of moisture applied to the glue surface must be sufficient to thoroughly dissolve the glue, and the glue itself must be of a good enough grade to go into immediate solution in ordinary water at room temperature. In other words, a flowable solution must be produced instantly. Insufficient moistening will make the glue tacky and sticky but will not carry the glue solution down into the surface to be sealed. Tape moistened with only a thin coating of water will invite the water to contract into isolated patches, and while such tape may stick quickly, it will not hold, especially after drying. Imperfect adhesion and blisters result.

If, on the other hand, too much water is used, or if the moistening act is too long prolonged (as in completely immersing the tape in a pan of water) the easily soluble glue may be washed away or else the glue will not have a chance to dry during the normal rubbing period. This has led to the development of a tape which combines

the stickiness of a thin coating of moisture with the holding power of a heavy coating of moisture. This apparent paradox has been successfully accomplished by grooving the glue—either in straight parallel lines or in zigzag designs. Such glues also aid moistening by presenting a larger surface to the water, thus softening quicker and more thoroughly. The grooves also permit the escape of air which otherwise might be trapped in blisters when the tape is being rubbed down.

Other glues are "cracked" to increase water absorption and flexibility. After tape has been glued by the manufacturer it is dried on steam heated drier rolls. This bakes the glue to a hard, smooth glassy surface which tends to shrink one side of the paper resulting in curled edges and stiff tape. Some manufacturers process the tape at this point by breaking the glue surface into millions of fine, hairline cracks. These make the tape soft and pliable, reduce curl and speed up moistening.

Because of the presence of this glue, reasonable care should be taken in the storage of gummed tape. Supplies should be kept in the original package in a cool dry room away from steam pipes and radiators. When first brought indoors in the winter time it should be allowed to season a few days before use as cold glue dissolves at a slower rate. Warm weather or water with a little vinegar added will speed up the moistening.

Mechanical moistening

In the early days moistening meant just that—wetting the glue with the easiest method at hand. Some drew the tape over a wet sponge. This not only resulted in insufficient water but also tended to transfer the glue to the sponge which became caked and worthless. Others dipped the tape into a pan of water which provided too much water and greatly delayed the setting time. Another way was to lay the tape upside down and pass a wet cloth or sponge over the glue with a slow, mussy operation as a result.

To fill these needs mechanical moisteners were developed and these have rapidly developed from the crude earlier designs to the efficient, practical models now available. These various styles can be divided into three general classes—the felt pad, the roller type and the brush moistener.

The felt pad type is least efficient as it delivers in-

1 and 2. Pull type gummed tape sealing machine where lever or gripper propels the tape over moistening unit. It delivers predetermined length of tape cut accurately and moistened. Photos Nashua Package Sealing Co.





sufficient water unevenly distributed and also rubs some of the glue off the tape.

The roller type is better as it delivers more water and is extremely simple to operate and maintain, besides being very inexpensive. It has the disadvantage of often applying the water in irregular areas and this is aggravated by variations in speed of withdrawal.

The brush type is the latest design of moistener, and it applies adequate water without skipping some areas and without wiping the glue off the tape. The brush is upside down and the only attention necessary is to see that there is always a full level of water in the fountain and to retake the brush before it wears too thin. The latest improvement designs have two brushes in tandem which increases efficiency, especially, at high speeds.

Modern moisteners come in a great many designs, both automatic and "handpull." Some can be adjusted to deliver predetermined lengths of tape, cut accurately and moistened. Others include a simple scale enabling the operator to withdraw the correct length each time even though each consecutive piece is desired of a different length. Some models will slit the tape into two widths in the delivery action. Often one pull of the handle moistens the tape, cuts it off and delivers it—the cutting being effected by the return stroke of the handle. Despite this complicated action, modern design has resulted in very compact, attractive models which can be reloaded in two seconds and which have a self-sharpening cut-off knife.

In selecting a moistener from all these models the following suggestions may be helpful:

1) Small automatic—measures and cuts a specified length strip in one operation. Adaptable for retail stores or small package sealing using 35 lb. 500 ft. rolls from ³/₄ in. to 1¹/₂ in. wide with glue outside. 2) Small band pull type—for 35 lb. 800 ft. rolls (glue inside). Tape width ³/₄ in. to 1¹/₂ in. For general package sealing.

3) Large semi-automatic—for carton sealing and medium sized shipping departments. Ejects a measured strip which is cut off with hand operated knife. Uses 60 lb. 600 ft. rolls, 2 in. to 4 in. wide. 4) Large automatic—For most efficient and economical carton sealing on a production basis. Ejects and cuts measured strips in one operation. Uses 60 lb. 600 ft. rolls 2 in. to 4 in. wide.

5) Large hand pull type—a serviceable machine for intermittent use especially on extra large packages.

6) There are also available complicated and expensive machines for special purposes. One of these automatically attaches gummed tape to a packed slotted carton. Another holds under pressure the two halves of a full telescope container while a 4 in. wide piece of gummed tape is wrapped all around the four sides of the joint.

Do you waste tape?

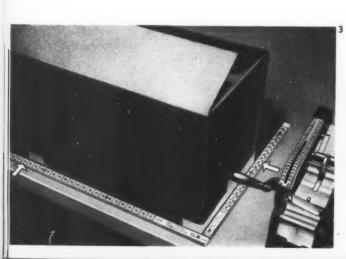
Many shipping departments look on sealing tape as a minor item which costs little or nothing and which can therefore be used without regard to expense. Others feel that the more tape used, the safer the outgoing package. A brief consideration of the function of sealing tape shows that the only place where tape is working on a fibreboard box is at the seams or joints. Two and a half or three inches overlap down the side simply anchors the tape which is reinforcing the seam above.

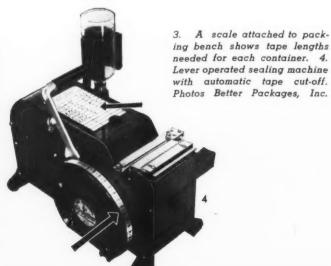
If this overlap is properly adhered another foot of tape won't make this seam any stronger. The top or bortom seam where the outer flaps meet should be sealed a strip lengthwise over this seam. Criss-crossing the tape over this seam is wasteful as only the 2 in. width at the seam is doing any good.

Almost any shipping platform can show containers with extra long pieces of tape down the sides and sometimes even overlapping the opposite tape to make a continuous wrap all around the box. Any schoolboy can calculate what this waste amounts to in a year. For instance, most boxes are sealed with six pieces of tape. If 5 in. are wasted at each end of each strip (not unusual) a total of 60 in. can be charged to waste on one large box—multiply that by the number of boxes per annum and get the answer in dollars and cents.

One shipper sealing only 200 cases a day saved \$435 a year by cutting the overlap back to 3 in. He was easily justified in installing a fixed length moistener. Of course, if tape is being applied with blisters and loose spots you may need this extra tape to compensate and hold the tape in place.

Another disadvantage of extra long overlaps is that they hide the printing on the box and, moreover, gummed tape does not stick well on printer's ink. In designing printing copy, why not allow 3 in. for the tape, if you seal with tape? This leaves the copy visible and reminds the operator to watch his cut-off length.





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BUYERS' DIRECTORY

ADHESIVES

ALL TYPES

Arabol Mfg. Co., The, New York, N. Y. Atlas Gum & Sizing Co., New York, N. Y. Bingham Brothers Co., New York, N. Y. Findley, F. G. Co., The, Milwaukee, Wis. Manhattan Paste & Glue Co., Bklyn, N. Y. Midland Glue Products Co., Detroit, Mich.

Midland Glue Products Co., Detroit, Mich.
Natl. Adhesives Div., Natl. Starch Products,
Inc., New York, N. Y.
Paisley Products, Inc., Chicago, Ill.
Plaskon Co., Inc., Toledo, Ohio
Sylvania Industrial Corp., New York, N. Y.
Union Paste Co., Hyde Park, Mass.
Williamsen, Adhesives, Loc. Chicago, Ill. Williamson Adhesives, Inc., Chicago, Ill.

AOUEOUS (Starch, Dextrine, Flour)

Arabol Míg. Co., The, New York, N. Y.
Atlas Gum & Sizing Co., New York, N. Y.
Bingham Brothers Co., New York, N. Y.
Dewey & Almy Chemical Co., Cambridge
B., Mass.
Findley, F. G. Co., The, Milwaukee, Wis.
Manhattan Paste & Glue Co., Bklyn, N. Y.
Midland Glue Products Co., Detroit, Mich.
Natl Adhesives Div. Natl Starch Products

Natl. Adhesives Div., Natl. Starch Products, Inc., New York, N. Y.
Paisley Products, Inc., Chicago, Ill.
Stein Hall Mfg. Co., Chicago, Ill.
Union Paste Co., Hyde Park, Mass. Williamson Adhesives, Inc., Chicago, Ill.

CELLULOSE

Arabol Mfg. Co., The, New York, N. Y.
Atlas Gum & Sizing Co., New York, N. Y.
Bingham Brothers Co., New York, N. Y.
Celanese Celluloid Corporation, New York,

N. Y.
Dispersions Process, Inc., New York, N. Y.
Eastman Kodak Co., Rochester, N. Y.
Findley, F. G. Co., The, Milwaukee, Wis.
Maas & Waldstein, Newark, N. J.
Manhattan Paste & Glue Co., Bklyn, N. Y.
Midland Glue Products Co., Detroit, Mich.
Mitchell-Rand Mfg. Co., New York, N. Y.
Natl. Adhesives Div., Natl. Starch Products,
Inc., New York, N. Y.
Paisley Products, Inc., Chicago, Ill.
Pyroxylin Products, Inc., Chicago, Ill.
Sylvania Industrial Corp., New York, N. Y.
Union Paste Co., Hyde Park, Mass.
Williamson Adhesives, Inc., Chicago, Ill.

Williamson Adhesives, Inc., Chicago, Ill.

EMULSION TYPE (Waxed Gums, Latex, Etc.)

Arabol Mfg. Co., The, New York, N. Y.
Atlas Gum & Sizing Co., New York, N. Y.
Bakelite Corp., New York, N. Y.
Bingham Brothers Co., New York, N. Y.
Dewey & Almy Chemical Co., Cambridge
B., Mass.
Dispersions

B., Mass.

Dispersions Process, Inc., New York, N. Y.

Findley, F. G. Co., The, Milwaukee, Wis.

Manhattan Paste & Glue Co., Bklyn, N. Y.,

Natl. Adhesives Div., Natl. Starch Products,

New York, N. Y.

Naugatuck Chemical, Div. U. S. Rubber

Co., New York, N. Y.

Paisley Products, Inc., Chicago, Ill.

Sylvania Industrial Corp., New York, N. Y.

Union Paste Co., Hyde Park, Mass.

Williamson Adhesives, Inc., Chicago, Ill.

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HOT AQUEOUS (Gelatine, Flexible Glues, Etc.)

American Cyanamid Co., Plastics Div., New York, N. Y.

American Cyanamid Co., Plastics Div., New York, N. Y.

Arabol Mfg. Co., The, New York, N. Y.

Atlas Gum & Sizing Co., New York, N. Y.

Bakelite Corp., New York, N. Y.

Bingham Brothers Co., New York, N. Y.

Findley, F. G. Co., The, Milwaukee, Wis.

Manhattan Paste & Glue Co., Bklyn, N. Y.

Natl. Adhesives Div., Natl. Starch Products, Inc., New York, N. Y.
Paisley Products, Inc., Chicago, Ill.
Sylvania Industrial Corp., New York, N. Y.
Union Paste Co., Hyde Park, Mass.
Williamson Adhesives, Inc., Chicago, Ill.

HOT, NON-AQUEOUS

(Hot Melt, e.g., Heat Sensitive Resins or Hot Waxes)

American Cyanamid Co., Plastics Div., American Cyanamid Co., Plastics Div., New York, N. Y. Arabol Mfg. Co., The, New York, N. Y. Atlas Gum & Sizing Co., New York, N. Y. Bakelite Corp., New York, N. Y. Bingham Brothers Co., New York, N. Y. Dewey & Almy Chemical Co., Cambridge B., Mass. Dispersions Process, Inc., New York, N. Y.

Dispersions Process, Inc., New York, N. Y. Findley, F. G. Co., The, Milwaukee, Wis. Manhattan Paste & Glue Co., Bklyn, N. Y. Mitchell-Rand Mfg. Co., New York, N. Y. Natl. Adhesives Div., Natl. Starch Products, Inc., New York, N. Y. Naugatuck Chemical Div., U. S. Rubber Co., New York, N. Y. Paisley Products, Inc., Chicago, Ill. Pyroxylin Products, Inc., Chicago, Ill. Stein Hall Mfg. Co., Chicago, Ill. Union Paste Co., Hyde Park, Mass. Williamson Adhesives. Inc., Chicago, Ill. Williamson Adhesives, Inc., Chicago, Ill.

MINERAL (Silicate of Soda)

Arabol Mfg. Co., The, New York, N. Y. Findley, F. G. Co., The, Milwaukee, Wis. Manhattan Paste & Glue Co., Bklyn, N. Y. Midland Glue Products Co., Detroit, Mich. Paisley Products, Inc., Chicago, Ill. Philadelphia Quartz Co., Phila., Pa. Williamson Adhesives, Inc., Chicago, Ill.

AMPOULES, GLASS

Cournand, E. L. Inc., New York, N. Y. Glass Industries, Inc., New York, N. Y. Kimble Glass Co., Vineland, N. J. Price, M. B. Associates, New York, N. Y.

APPLICATOR, CLOSURES

See Closures, Applicator

APPLICATORS, MEDICINAL

(Separate from Closure)

Armstrong Cork Co., Lancaster, Pa. Celluplastic Corp., Newark, N. J. Cournand, E. L. Inc., New York, N. Y. Glass Industries, Inc., New York, N. Y. Kimble Glass Co., Vineland, N. J. Price, M. B. Associates, New York, N. Y. Stondard, Specialty & The Co. J. Stondard Standard Specialty & Tube Co., New Brighton, Pa. Victor Metal Prods. Corp., Bklyn, N. Y. Wirz, A. H. Inc., Chester, Pa.

BAG TIES

Acme Steel Co., Chicago, Ill. Bethlehem Steel Co., Bethlehem, Pa. Betner, Benj. C. Co., Devon, Pa. Royal, Thomas M. & Co., Phila., Pa.

ANTI-TARNISH

(Cloth and Cotton-Lined Paper) Andrews, P. L. Corp., Bklyn, N. Y.
Bemis Bro. Bag Co., St. Louis, Mo.
Cottonluxe Mfg. Co., New York, N. Y.
Eureka Mfg. Co., Taunton, Mass.
Paramount Paper Products Co., Inc., Phila., Varey-Shea Bag Corp., Elizabeth, N. J.

COMBINATION

COMBINATION

Bemis Bro. Bag Co., St. Louis, Mo.

Betner, Benj. C. Co., Devon, Pa.

Comet Envelope & Paper Co., New York,
N. Y.

Crown Can Co., Phila., Pa.

Equitable Paper Bag Co., Inc., Long Island
City, N. Y.

Fulton Bag & Cotton Mills, Atlanta, Ga.

Interstate Folding Box Co., The, Middletown. Ohio

town, Ohio

Milprint, Inc., Milwaukee, Wis.
Paramount Paper Products Co., Inc., Phila.,

Royal, Thomas M. & Co., Phila., Pa. Weber, H. G. & Co., Inc., Kiel, Wis.

Bemis Bro. Bag Co., St. Louis, Mo.

Betner, Benj. C. Co., Devon, Pa.

Continental Bag Specialties Corp., New
York, N. Y. York, N. Y.
Dobeckmun Co., The, Cleveland, Ohio
Milprint, Inc., Milwaukee, Wis.
Neostyle, Inc., Chicago, Ill.
Oneida Paper Prod., Inc., New York, N. Y.
Reynolds Metals Co., Richmond, Va.
Royal, Thomas M. & Co., Phila., Pa.
Shellmar Products Co., Mt. Vernon, Ohio
Union Bag & Paper Corp., New York, N. Y.

GLASSINE & WAXED

American Paper Goods Co., The, Kensing-American Paper Goods Co., The, Actions
ton, Conn.
Bemis Bro. Bag Co., St. Louis, Mo.
Betner, Benj. C. Co., Devon, Pa.
Central Waxed Paper Co., Chicago, Ill.
Comet Envelope & Paper Co., Inc., New York, N. Y.
Continental Bag Specialties Corp., New York, N. Y.
Cupples-Hesse Corp., St. Louis, Mo.
Dixie Wax Paper Co., Inc., Dallas, Tex.
Equitable Paper Bag Co., Inc., Long Island City, N. Y.
Food Packaging, Div. of Milprint, Inc.,
Milwaukee, Wis. Interstate Folding Box Co., The, Middle-

Interstate Folding Box Co., The, Middle-town, Ohio
Mason Envelope Co., New York, N. Y.
Milprint, Inc., Milwaukee, Wis.
Moser Bag & Paper Co., The, Cleveland.
Ohio

Ohio Neostyle, Inc., Chicago, Ill.
Newark Paraffine & Parchment Paper Co.
Newark, N. J.
Oneida Paper Prod., Inc., New York, N. Y.
Paramount Paper Products Co., Inc., Phila.,

Royal, Thomas M. & Co., Phila., Pa. St. Regis Paper Co., New York, N. Y. Shellmar Products Co., Mt. Vernon, Ohio Sweetnam, Geo. H. Inc., Cambridge, Mass. Tower Envelope Co., New York, N. Y. Union Bag & Paper Corp., New York, N. Y. U. S. Envelope Co., Springfield, Mass. Wolf Bros., Phila., Pa.

MILTIWALL HEAVY DUTY

Bagpak, Inc., New York, N. Y.
Bemis Bro. Bag Co., St. Louis, Mo.
Equitable Paper Bag Co., Inc., Long Island
City, N. Y.
George & Sherrard Paper Co., New York,
N. Y.

N. Y. International Paper Prods. Div. of International Paper Co., New York, N. Y. St. Regis Paper Co., New York, N. Y. Union Bag & Paper Corp., New York, N. Y.

TEXTILE

Acme Burlap Bag Co., Bklyn, N. Y. Ames Bag Machine Co., Selma, Ala. Ames Harris Neville Co., San Francisco, Calif.

Ames narris Nevine Co., San Francisco, Calif.

Arkell Safety Bag Co., New York, N. Y.
Bemis Bro. Bag Co., St. Louis, Mo.
Bosworth, M. M. Co., Memphis, Tenn.
Central Bag & Burlap Co., Chicago, Ill.
Chase Bag Co., New York, N. Y.
Cincinnati Industries, Inc., Cincinnati, Ohio
Continental Bag Specialties Corp., New
York, N. Y.

Cincinnati Industries, Inc., Cincinnati, Ohio Continental Bag Specialties Corp., New York, N. Y.

Cottonluxe Mfg. Co., New York, N. Y.
Crescent Burlap Bag Co., New Orleans, La.
Crystal Bag Co., Chickamauga, Ga.
Empire State Bag Co., Bklyn, N. Y.
Eureka Mfg. Co., Taunton, Mass.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Gallie-King Bag Co., Houston, Tex.
Grafflin Bag Co., Baltimore, Md.
Halsted, E. S. & Co., Inc., New York, N. Y.
Hardin Bag & Burlap Co., New Orleans, La.
Heinrich, H. H. Inc., New York, N. Y.
Hutchinson Bag Co., Inc., New York, N. Y.
Keystone Bag & Burlap Co., Lancaster, Pa.
Lawson, Jacob Bag Co., New York, N. Y.
Lone Star Bag & Bagging Co., Houston,
Tex.

Lone Star Bag & Bagging Co., Houston, Tex.

Maine Potato Bag Co., Caribou, Maine Mente & Co., Inc., New Orleans, La.

Millhiser Bag Co., Richmond, Va.

Morgan Bros., Richmond, Va.

Morgan Bros., Richmond, Va.

National Bag Corp., New York, N. Y.

Neahr, M. J. & Co., Chicago, Ill.

Noon Bag Co., Portland, Ore.

Pacific Diamond H Bag Co., San Francisco, Calif

Calif.
Southern States Bag Co., Jacksonville, Fla. Sprosty, Dan A. Bag Co., Baltimore, Md. Sterling Bag Co., Bklyn, N. Y. Ullmann Bag Co., The, Detroit, Mich. Varey-Shea Bag Corp., Elizabeth, N. J. Walker Bag Co., Louisville, Ky. Werthan Bag Corp., Nashville, Tenn. Wertheimer Bag Co., Wilmington, N. C. West Coast Bags, Inc., Los Angeles, Calif.

TRANSPARENT (Cellulosic)

American Paper Goods Co., The, Kensington, Conn.
Central States Paper & Bag Co., St. Louis, Mo.
Comet Envelope & Paper Co., Inc., New York, N. Y.
Continental Bag Specialties Corp., New York, N. Y.
Crystal Transparent Mfg. Co., Inc., New York, N. Y.
Crystal Tube Mfg. Co., Chicago, Ill.
Cupples-Hesse Corp., St. Louis, Mo.
Dennison Mfg. Co., Framingham, Mass.
Dobeckmun Co., The, Cleveland, Ohio Equitable Paper Bag Co., Inc., Long Island City, N. Y.
Food Packaging Div. of Milprint, Inc., Milwaukee, Wis.
Humitube Mfg. Co., Peoria, Ill.

Interstate Folding Box Co., The, Middletown, Ohio
Mason Envelope Co., New York, N. Y.
Menasha Products Co., The, Menasha, Wis.
Milprint, Inc., Milwaukee, Wis.
Moser Bag & Paper Co., Cleveland, Ohio
Munson Bag Co., The, Cleveland, Ohio
Meostyle, Inc., Chicago, Ill.
Newark Paraffine & Parchment Paper Co.,
Newark, N. J.
Oneida Paper Products, Inc., New York,
N. Y.
Paramount Paper Products Co., Inc., Phila.,

Pa.
Print-A-Tube Co., Passaic, N. J.
Royal, Thomas M. & Co., Phila., Pa.
Shellmar Products Co., Mt. Vernon, Ohio
Sweetnam, Geo. H. Inc., Cambridge, Mass.
Tower Envelope Co., New York, N. Y.
Trans-Pac Services, Inc., New York, N. Y.
Union Bag & Paper Corp., New York, N. Y.
U. S. Envelope Co., Springfield, Mass.
Wolf Bros., Phila., Pa.

BOTTLES

ALUMINUM

American Aluminum Ware Co., Newark, N. J.

APPLIED COLOR

Anchor Hocking Glass Corp., Lancaster, Ohio
Armstrong Cork Co., Lancaster, Pa.
Ball Brothers Co., Muncie, Ind.
Buck Glass Co., The, Baltimore, Md.
Carr-Lowrey Glass Co., Baltimore, Md.
Glass Containers, Inc., Los Angeles, Calif.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Kimble Glass Co., Vineland, N. J.
Liberty Glass Co., Sapulpa, Okla.
Owens-Illinois Glass Co., Toledo, Ohio
Owens-Illinois Pacific Coast Co., San Francisco, Calif.
Swindell Bros., Baltimore, Md.
Wheaton, T. C. Co., Millville, N. J.

BEVERAGE

Anchor Hocking Glass Corp., Lancaster, Ohio
Armstrong Cork Co., Lancaster, Pa.
Ball Brothers Co., Muncie, Ind.
Brockway Glass Co., Brockway, Pa.
Buck Glass Co., The, Baltimore, Md.
Glass Containers, Inc., Los Angeles, Calif.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Liberty Glass Co., Sapulpa, Okla.
Owens-Illinois Glass Co., Toledo, Ohio
Owens-Illinois Pacific Coast Co., San Francisco, Calif.
Swindell Bros., Baltimore, Md.

COLORED

Anchor Hocking Glass Corp., Lancaster, Ohio
Ball Brothers Co., Muncie, Ind.
Brockway Glass Co., Brockway, Pa.
Carr-Lowrey Glass Co., Baltimore, Md.
Double Duty Products, Inc., Cleveland, Ohio
Glass Containers, Inc., Los Angeles, Calif.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Kimble Glass Co., Vineland, N. J.
Maryland Glass Corp., Baltimore, Md.
Owens-Illinois Glass Co., Toledo, Ohio
Owens-Illinois Pacific Coast Co., San Francisco, Calif.
Pennsylvania Glass Products Co., Pittsburgh, Pa.
Swindell Bros., Baltimore, Md.
Wheaton, T. C. Co., Millville, N. J.

FOOD PACKING

Anchor Hocking Glass Corp., Lancaster, Ohio Armstrong Cork Co., Lancaster, Pa.

Ball Brothers Co., Muncie, Ind.

Brockway Glass Co., Brockway, Pa.
Carr-Lowrey Glass Co., Baltimore, Md.
Glass Containers, Inc., Los Angeles, Calif.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Kimble Glass Co., Vineland, N. J.
Owens-Illinois Glass Co., Toledo, Ohio
Owens-Illinois Pacific Coast Co., San Francisco, Calif.

HAND MADE

Carr-Lowrey Glass Co., Baltimore, Md. Glass Industries, Inc., New York, N. Y. Kimble Glass Co., Vineland, N. J. Owens-Illinois Glass Co., Toledo, Ohio Owens-Illinois Pacific Coast Co., San Francisco, Calif. Swindell Bros., Baltimore, Md. Wheaton, T. C. Co., Millville, N. J.

MILK

Buck Glass Co., The, Baltimore, Md. Liberty Glass Co., Sapulpa, Okla. Owens-Illinois Glass Co., Toledo, Ohio Owens-Illinois Pacific Coast Co., San Francisco, Calif.

PAPER (MILK)

See Containers, Paper (Milk)

PROPRIETARY & PRESCRIPTION

Anchor Hocking Glass Corp., Lancaster, Ohio
Armstrong Cork Co., Lancaster, Pa.
Ball Brothers Co., Muncie, Ind.
Brockway Glass Co., Brockway, Pa.
Buck Glass Co., The, Baltimore, Md.
Carr-Lowrey Glass Co., Baltimore, Md.
Glass Containers, Inc., Los Angeles, Calif.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Kimble Glass Co., Vineland, N. J.
Owens-Illinois Glass Co., Toledo, Ohio
Owens-Illinois Pacific Coast Co., San Francisco, Calif.
Pennsylvania Glass Products Co., Pittsburgh Pa.
Swindell Bros., Baltimore, Md.
Wheaton, T. C. Co., Millville, N. J.

TOILET, PERFUME, COSMETIC

Anchor Hocking Glass Corp., Lancaster, Ohio
Armstrong Cork Co., Lancaster, Pa.
Ball Brothers Co., Muncie, Ind.
Brockway Glass Co., Brockway, Pa.
Carr-Lowrey Glass Co., Baltimore, Md.
Glass Containers, Inc., Los Angeles, Calif.
Glass Industries, Inc., New York, N. Y.
Hamilton, J. T. & A. Co., Pittsburgh, Pa.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Kimble Glass Co., Vineland, N. J.
Maryland Glass Corp., Baltimore, Md.
Owens-Illinois Glass Co., Toledo, Ohio
Owens-Illinois Pacific Coast Co., San Francisco, Calif.
Swindell Bros., Baltimore, Md.
Wheaton, T. C. Co., Millville, N. J.

BOX BOARD

ASPHALT LINED

Butterfield-Barry Co., Inc., The, New York, N. Y.
Consolidated Paper Co., Monroe, Mich.
Fibreboard Prods., Inc., San Francisco, Calif.
Gardner-Richardson Co., The, Middletown, Ohio
Jaypaco Co., New York, N. Y.
Morris Paper Mills, Chicago, Ill.
Ohio Boxboard Co., The, Rittman, Ohio
Rexford Paper Co., Milwaukee, Wis.
Salwen, Joe Paper Co., New York, N. Y.
Waldorf Paper Products Co., St. Paul,
Minn.

Addresses of companies listed appear on pages 628-634

CLAY-COATED

American Coating Mills, Inc., Elkhart, Ind. Bradner Smith & Co., Chicago, Ill. Butterfield-Barry Co., Inc., The, New York, Champion Paper & Fibre Co., The, Hamilton, Ohio

Container Corp. of America, Chicago, Ill. Gardner-Richardson Co., The, Middletown, Ohio

Hinkson Paper Co., Palmer, Mass. Jaypaco Co., New York, N. Y. Lebanon Paper Box Co., Lebanon, Pa. Lowe Paper Co., Ridgefield, N. J.
National Folding Box Co., New Haven, Conn

Salwen, Joe Paper Co., New York, N. Y.

FOLDING & SET-UP

Albia Box & Paper Co., Troy, N. Y. Alton Box Board Co., Alton, Ill. American Box Board Co., Grand Rapids,

American Coating Mills, Inc., Elkhart, Ind. Andrews, O. B. Co., Chattanooga, Tenn. Butterfield-Barry Co., Inc., The, New York,

Carolina Paper Board Corp., Charlotte,

Carthage Paper Makers, Inc., Carthage,

Chemical Fibre Products Co., Chicago, Ill. Chemical Paper Mfg. Co., Holyoke, Mass. Chesapeake Paperboard Co., The, Baltimore, Md.

Columbia Box Board Mills, Inc., Chatham,

Consolidated Paper Co., Monroe, Mich. Container Corp. of America, Chicago, Ill. Continental Paper Co., Ridgefield Park, N.J. Cornell Wood Products Co., Chicago, Ill. Clifton Paper Board Co., Clifton, N. J. Eddy Paper Corp., The, Chicago, Ill. Federal Mills, Bogota, N. J. Fibreboard Products, Inc., San Francisco,

Calif. Fleming & Son, Inc., Dallas, Texas
Fort Orange Paper Co., Castleton-onHudson, N. Y.
Franklin Board & Paper Co., The, Franklin,

Gair, Robert Co., Inc., New York, N. Y. Gardner-Richardson Co., The, Middletown,

Ohio Hummel & Downing Co., Milwaukee, Wis. Hummel-Ross Fibre Corp., Hopewell, Va. Inland Container Corp., Indianapolis, Ind.

Jaypaco Co., New York, N. Y.
Lawless Bros. Paper Mills, Inc., E. Rochester, N. Y.
Liberty Paperboard Co., The, Steubenville,

Lowe Paper Co., Ridgefield, N. J. Lydall & Foulds Paper Co., Manchester, Conn.

Mac Andrews & Forbes Co., Camden, N. J. Mac Sim Bar Paper Co., Otsego, Mich. Manchester Board & Paper Co., Richmond,

McEwan Bros., Inc., Whippany, N. J. Menasha Products Co., The, Menasha, Wis.

Michigan Carton Co., Battle Creek, Mich. Mobile Paper Mill Co., Mobile, Ala. Morris Paper Mills, Chicago, Ill. Natick Box & Board Co., Natick, Mass. National Folding Box Co., New Haven,

Conn. Nelson, B. F. Mfg. Co., Minneapolis, Minn. New Haven Pulp & Board Co., New Haven,

Conn. Conn.
Newark Boxboard Co., Newark, N. J.
Ohio Boxboard Co., The, Rittman, Ohio
Ontonagon Fibre Corp., Ontonagon, Mich.
Queen City Paper Co., The, Akron, Ohio
Robertson Paper Box Co., Montville, Conn.
Salwen, Joe Paper Co., New York, N. Y.
Schmidt & Ault Paper Co., York, Pa.
Smeallie & Voorbeer, Inc. Amsterdam, N. V. Smeallie & Voorhees, Inc., Amsterdam, N.Y.

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Sonoco Products Co., Garwood, N. J. Southern Kraft Div., International Paper Co., New York, N. Y. Strange, John Paper Co., Menasha, Wis. Sutherland Paper Co., Kalamazoo, Mich. Tennessee Paper Mills, Chattanooga, Tenn.

Toronto Paper Mfg. Co., The, Toronto, Ohio United Paperboard Co., New York, N. Y. Waldorf Paper Products Co., St. Paul, Minn.

METALLIC-COATED American Coating Mills, Inc., Elkhart,

Bradner Smith & Co., Chicago, Ill.
Butterfield-Barry Co., Inc., The, New York, Champion Paper & Fibre Co., The, Hamil-Champion Paper & Fibre Co., The, Hamilton, Ohio Dennison Mfg. Co., Framingham, Mass. Jaypaco Co., New York, N. Y. Keller-Dorian Paper Co., New York, N. Y. Lowe Paper Co., Ridgefield, N. J. Matthias Paper Corp., Phila., Pa. McLaurin-Jones Co., Brookfield, Mass. Miller Paper Co., New York, N. Y. Paper Affiliates Co., Inc., New York, N. Y. Salwen, Joe Paper Co., New York, N. Y.

BOXES

CORRUGATED & SOLID FIBRE

American Box Board Co., Grand Rapids, Mich.

Mich.

American Coating Mills, Inc., Elkhart, Ind.
Ashtabula Corrugated Box Co., The,
Ashtabula, Ohio
Carpenter Container Corp., Bklyn., N. Y.
Consolidated Paper Co., Monroe, Mich.
Container Corp. of America, Chicago, Ill.
Continental Container Corp., Bklyn., N. Y.
Crook Paper Box Co., Kansas City, Mo.
Eggerss O'Flyng Co., Omaha, Nebr.
Excelsior Paper Specialties Co., New York,
N. Y.

Federal Container Co., Phila., Pa Fibreboard Prods., Inc., San Francisco, Calif.

Fort Wayne Corrugated Paper Co., Fort Wayne, Ind.

Gair, Robert Co., Inc., New York, N. Y. Gaylord Container Corp., St. Louis, Mo. Grand City Container Corp., New York,

Hankins Container Co., Cleveland, Ohio Hinde & Dauch Paper Co., The, Sandusky,

Ohio
Inland Container Corp., Indianpolis, Ind.
Keystone Box Co., Pittsburgh, Pa.
Kress, F. J. Box Co., Pittsburgh, Pa.
Maryland Container Co., Baltimore, Md.
National Container Corp., Long Island
City, N. Y.
National Metal Edge Box Co., Phila., Pa.
Ohio Boxboard Co., The, Rittman, Ohio
Ottawa River Paper Co., The, Toledo,
Ohio

Ohio

Owens-Illinois Glass Co., Toledo, Ohio Owens-Illinois Pacific Coast Co., Owens-Illinois Pa Francisco, Calif. St. Regis Paper Co., New York, N. Y. U. S. Corrugated Fibre Box Co., Indian-

apolis, Ind. Waldorf Paper Products Co., St. Paul,

FANCY WOOD

Anderson Box & Basket Co., Henderson,

Ky.
Arrow Mfg. Co., Inc., Hoboken, N. J.
Eureka Mfg. Co., Taunton, Mass.
Harlich Mfg. Co., Mastercraft Div., Chicago, III.

Mele Mfg. Co., New York, N. Y.

New England Box Co., Greenfield, Mass. Nicoll & Co., San Francisco, Calif. Parfait Powder Puff Co., Inc., Chicago, Ill. Peterson Bros., Chicago, Ill.

Pilliod Cabinet Co., The, Swanton, Ohio Schunack, C. E. Inc., Meriden, Conn. Smith, S. K. Co., The, Chicago, Ill. Stiles, H. A. & Co., Boston, Mass. Warner Bros. Co., Bridgeport, Conn.

LEATHERETTE

Apex Paper Box Corp., Chicago, Ill.
Arrow Mfg. Co., Inc., Hoboken, N. J.
Chaspec Mfg. Co., New York, N. Y.
Consolidated Box Co., Inc., Tampa, Fla.
Deisroth, W. H. Co., Inc., Phila., Pa.
Dennison Mfg. Co., Framingham, Mass.
Ehlbert Products, Chicago, Ill.
Eureka Mfg. Co., Taunton, Mass.
Farrington Mfg. Co., Boston, Mass.
Harlich Mfg. Co., Mastercraft Div., Chicago, Ill. cago, Ill.

Howell, F. M. & Co., Elmira, N. Y.
Lindley Box & Paper Co., Marion, Ind. Lorscheider-Schang Co., Inc., The, Rochester, N. Y. Mason Box Co., The, Attleboro Falls, Mass. Neumann, Robert Co., The, Cincinnati, Ohio Old Dominion Box Co., Charlotte, N. C. Old Dominion Box Co., Charlotte, N. C. Pictorial Paper Package Corp., Aurora, Ill. Pilliod Cabinet Co., The, Swanton, Ohio Schulz, A. Geo. Co., Milwaukee, Wis. Schunak, C. E., Inc., Meriden, Conn. Smith, S. K. Co., The, Chicago, Ill. Star Case Co., The, New York, N. Y. Textileather Corp., Toledo, Ohio Warner Bros. Co., Bridgeport, Conn.

MAILING

Calumet Carton Co., Harvey, Ill. Campbell Box & Tag Co., South Bend, Ind. Crook Paper Box Co., Kansas City, Mo. Cross Paper Products Corp., New Y

Deisroth, W. H. Co., Inc., Phila., Pa. Electric City Box Co., Buffalo, N. Y. Estes, E. B. & Sons, Inc., New York, N. Y. Fibreboard Products, Inc., San Francisco, Calif.

Flashfold Box Corp., Ft. Wayne, Ind. Fox, C. J. Co., The, Providence, R. I. Gair, Robert Co., Inc., New York, N. Y. Gardner-Richardson Co., The, Middletown, Ohio
Gates Paper Co., Ltd., The, Los Angeles,

Howell, F. M. & Co., Elmira, N. Y.
Indianapolis Paper Container Co., Indianapolis, Ind.
International Mailing Tube & Wrapper Co.,
Long Island City, N. Y
Kalamazoo Paper Box Co., Kalamazoo,

Mich.

Keystone Box Co., Pittsburgh, Pa. Lindley Box & Paper Co., Marion, Ind. Mason Box Co., The, Attleboro Falls, Mass Michigan Carton Co., Battle Creek, Mich. Miller, Walter P. Co., Inc., Phila., Pa. Myers, J. & P. B., Inc., Jersey City, N. J. National Folding Box Co., New Haven. Conn.

National Metal Edge Box Co., Phila., Pa. Neumann, Robert Co., The, Cincinnati,

Ohio Boxboard Co., The, Rittman, Ohio Old Dominion Box Co., Charlotte, N. C. Pharmacy Paper Box Co., Chicago, Ill. Pharmacy Paper Box Co., Chicago, Ill. Pictorial Paper Package Corp., Aurora, Ill. Ritchie, W. C. & Co., Chicago, Ill. Schoettle, Edwin J. Co., Phila., Pa. Schulz, A. Geo., Co., Milwaukee, Wis. Schunak, C. E., Inc., Meriden, Conn. Seaman Box Co., Inc., New York, N. Y. Sears, Merle Inc., Danville, Ill. Shoup-Owens Inc., Hoboken, N. J. Shuttleworth Carton Co., Inc., New York, N. Y.

N. Y. Sutherland Paper Co., Kalamazoo, Mich. Taylor Box Co., Providence, R. I. Waldorf Paper Products Co., St. Paul, Minn.

Warner Brothers Co., The, Bridgeport, Conn. Wilkata Folding Box Co., Kearney, N. J.

Young, Douglas Inc., Pawtucket, R. I. Young, Everett Co., Providence, R. I.

METAL, COVERED (Fabric, Leatherette, Etc.)

Arrow Mfg. Co., Inc., Hoboken, N. J. Eureka Mfg. Co., Inc., Taunton, Mass. Farrington Mfg. Co., Boston, Mass. Grammes, L. F. & Sons, Inc., Allentown, Pa. Harlich Mfg. Co., Mastercraft Div., Chicago,

Hudson, H. L. Co., The, Bklyn., N. Y. Schleicher, F. J. Paper Box Co., St. Louis,

Seaman Box Co., Inc., New York, N. Y. Smith, S. K. Co., The, Chicago, Ill.

METAL EDGE

National Metal Edge Box Co., Phila., Pa.

METAL SPECIALTIES (For Mascara, Cosmetics, Compacts, Etc.)

Advertising Metal Display Co., Chicago, Ill. Aluminum Co. of America, Pittsburgh, Pa. American Aluminum Ware Co., Newark,

N. J. Chase Brass & Copper Co., Inc., Waterbury,

Chase Brass & Copper Co., Inc., Waterbury, Conn.
Clark, J. L. Mfg. Co., Rockford, Ill.
Crown Can Co., Phila., Pa.
Ellis, George D. & Sons, Inc., Phila., Pa.
Farrington Mfg. Co., Boston, Mass.
Grammes, L. F. & Sons, Inc., Allentown, Pa.
Gutmann, Ferdinand & Co., Bklyn., N. Y.
Harlich Mfg. Co., Mastergett Div. Chicago Harlich Mfg. Co., Mastercraft Div., Chicago,

Hudson, H. L. Co., The, Bklyn, N. Y. Majestic Metal Specialties, Inc., New York, N

Scovill Mfg. Co., Waterbury, Conn.
Seymour Products Co., The, Seymour,
Conn.

Smith, S. K. Co., The, Chicago, Ill.

MOLDED PLASTIC

See Molders, Plastic

MOLDED PULP

See Containers, Molded Pulp

PAPER SET-UP

Adler, H. M. & Co., Baltimore, Md. Alderman Paper Box Corp., Rochester, N. Y. American Tri-State Paper Box Co., Nashville, Tenn.

Angelus Paper Box Co., Los Angeles, Calif. Anger Paper Box Co., Los Angeles, Calir. Apex Paper Box Corp., Chicago, Ill. Atlas Paper Box Co., Chattanooga, Tenn. Babcock, A. H. Co., The, Attleboro, Mass. Baldwin, Eli & Son, Inc., New York, N. Y. Bicknell & Fuller Paper Box Co., Boston,

Bird & Son, Inc., East Walpole, Mass. Bisler, G. A., Inc., Phila., Pa.
Brick & Ballerstein, New York, N. Y.
Bridgeport Paper Box Co., Bridgeport, Conn.

Buedingen, Ferdinand Co., Inc., Rochester,

Buffington, F. H. Co., Providence, R. I. Burt, F. N. Co., Inc., Buffalo, N. Y. Cambridge Paper Box Co., Cambridge, Mass.

Carter, Wm. Co., Needham Heights, Mass. Casselman, T. & E. Inc., New York, N. Y. Central States Paper & Bag Co., St. Louis,

Mo. Claff, M. B. & Sons, Inc., Randolph, Mass. Columbus Paper Box Co., Inc., Columbus, Ohio

Compressed Paper Box Corp., Bridgeport, Conn.

Consolidated Box Co., Inc., Tampa, Fla Consolidated Paper Box Co., Somerville,

Crompton-Adelphia Corp., John, Phila., Pa. Crook Paper Box Co., N. Kansas City, Mo. Datz Mfg. Co., Phila., Pa. Deisroth, W. H. Co., Inc., Phila., Pa. Dennison Mfg. Co., Framingham, Mass. Dix, J. J., Inc., New York, N. Y. Dorfman, A. Co., Inc., New York, N. Y. Eagle Paper Box Co., New York, N. Y. Eagle Paper Box Mfg. Co., Chicago, Ill. Eggerss O'Flyng Co., Omaha, Nebr. Eureka Paper Box Corp., Chicago, Ill. Fairchild, E. E., Corp., Rochester, N. Y. Fibreboard Products, Inc., San Francisco, Calif.

Calif.

Fleishhacker Paper Box Co., San Francisco, Calif.

Fleisig, H., Inc. New York, N. Y.

Flour City Paper Box Co., Minneapolis,

Flour City Paper Box Co., Minneapolis, Minn.

Flower City Specialty Co., Rochester, N. Y.

Foster & Cross, Inc., Bklyn., N. Y.

Frankenberg Bros., Columbus, Ohio

Friend Box Co., Danvers, Mass.

Garfield Box Co., Clifton, N. J.

Gerbereux, Dufft & Kinder, New York, N.Y.

Great Lakes Box Co., The, Cleveland, Ohio

Grand, Rapids, Paper, Box Co., Grand

Grand, Rapids, Paper, Box Co., Grand Grand Rapids Paper Box Co., Grand Rapids, Mich.

Rapids, Mich.
Hess & Densen, New York, N. Y.
Henry, Ira L. Co., Watertown, Wis.
Heywood Mfg. Co., Minneapolis, Minn.
Hickory Paper Box Co., Hickory, N. C.
High Point Paper Box Co., Inc., High Point.

Hoague-Sprague Corp., Lynn, Mass. Hollywood Paper Box Corp., Hollywood,

Howell, F. M. & Co., Elmira, N. Y.
Indianapolis Paper Container Co., Indianapolis, Ind.

Jones, Jesse Paper Box Co., Phila., Pa. Kalamazoo Paper Box Co., Kalamazoo,

Kentucky Paper Box Co., Louisville, Ky. Kentucky Paper Box Co., Louisville, Ky. Keystone Box Co., Pittsburgh, Pa. Kiernan-Hughes Co., Jersey City, N. J. Klein, A. & Co., Inc., New York, N. Y. Koehl, Wm. Co., The, Cincinnati, Ohio Kroeck Paper Box Co., Chicago, Ill. L-A Paper Box Factory, Los Angeles, Calif. Lebanon Paper Box Co., Lebanon, Pa. Lengsfield Bros., Inc., New Orleans, La. Lorscheider-Schang Co., Rochester, N. Y. Maryland Paper Box Co., Baltimore, Md. Mason Box Co., The, Attleboro Falls, Mass. Mason Box Co., The, Attleboro Fails, Mass. McClintock Corp., The, Harrisburg, Pa. Meyer, Frank C. Co., Inc., Bklvn, N. Y. Miller, Walter P. Co., Inc., Phila., Pa. Minkoff & Rosenfield Bros., Inc., Bklyn.,

Minkoli & Rosenheid Bros., Inc., Bklyn., N. Y.
Moser Paper Box Co., St. Louis, Mo.
National Metal Edge Box Co., Phila., Pa.
National Paper Box Co., Kansas City, Mo.
Neumann, Robert Co., Cincinnati, Ohio
Newark Paper Box Co., Newark, N. J.
Newton Carton, Newark, N. J.
Old Dominion Box Co., Charlotte, N. C.
Paper Package Co., Indianapolis, Ind.
Pharmacy Paper Box Co., Chicago, Ill.
Pictorial Paper Package Corp., Aurora, Ill.
Plumly, Eugene K. Co., Phila., Pa.
Pohlig Bros., Richmond, Va.
Pollick Paper & Box Co., Dallas, Tex.
Quality Park Box Co., St. Paul, Minn.
Randolph Paper Box Co., Richmond, Va.
Ritchie, W. C. & Co., Chicago, Ill.
Rock City Paper Box Co., Inc., Nashville,
Tenn.

Tenn.
Rogers, Edward H., Inc., New York, N. Y.
Rowell, E. N. Co., Inc., Batavia, N. Y.
Rubin, Jos. & Sons, Inc., Bklyn, N. Y.
Scandore Paper Box Co., Bklyn, N. Y.
Schleicher, F. J. Paper Box Co., St. Louis,

Schmeer's Paper Box Co., Inc., Syracuse,

Schmidt, Henry & Bro., Inc., Phila., Pa. Schoettle, Edwin J. Co., Phila., Pa. Schulz, A. Geo. Co., Milwaukee, Wis. Schunak, C. E., Inc., Meriden, Conn.

Schurmann, F. A., Inc., Bklyn, N. Y.
Scott & McDonald, Inc., Everett, Mass.
Seaman Box Co., Inc., New York, N. Y.
Seeley Tube & Box Co., Newark, N. J.
Service Paper Box Co., St. Louis, Mo.
Shampain, Citron, Clark, Inc., Bklyn, N. Y.
Shaw Paper Box Co., Meriden, Conn.
Shawprint, Inc., Lowell, Mass.
Shomer-Majestic Box Corp., New York,
N. Y.

Shomer-Majestic Box Corp., New York, N. Y.
Shoup-Owens, Inc., Hoboken, N. J.
Simplex Paper Box Corp., Lancaster, Pa.
Smith-Lustig Paper Box Mfg. Co., The,
Cleveland, Ohio
Snyder, Geo. H., Inc., Phila., Pa.
Specialty Paper Box Co., Bklyn, N. Y.
Sterling-Wasser Box Co., Homestead, Pa.
Strouse, Adler Co., The, New Haven, Conn.
Taylor Box Co., Providence, R. I.
Terre Paper Box Co., Chicago, Ill.
Thoma Paper Box Co., Inc., Buffalo, N. Y.
Union Paper Box Mfg. Co., Seattle, Wash.
Utica Box Co., Inc., Utica, N. Y.
Van Ness Bross., Inc., Paterson, N. J.
Wallace Paper Box Corp., New York, N. Y.
Warner Bros. Co., Bridgeport, Conn.
Waterbury Paper Box Co., Waterbury,
Conn. Conn.

Conn.
Wilkens Paper Box Co., Inc., Boston, Mass.
Wilson Paper Box Co., Richmond, Va.
Young, Douglas Inc., Pawtucket, R. I.
Young, Everett Co., Providence, R. I.
Zumbiel, C. W. Co., The, Norwood, Ohio

RIGID TRANSPARENT

Acme Paper Box Co., Chicago, Ill.
Allvue Container Corp., Bklyn, N. Y.
Arrow Mfg. Co., Hoboken, N. J.
Athol Paper Box Co., Athol, Mass.
Atlanta Box Factory, Atlanta, Ga.
Atlantic Paper Box Co., Boston, Mass.
Autokraft Box Co., Hanover, Pa.
Babcock Box Co., Atleboro, Mass.
Barger Box Co., Inc., Elkhart, Ind.
Bisler, G. A., Inc., Phila., Pa.
Box Novelties, Inc., New York, N. Y.
Box Shop, Inc., New Haven, Conn.
Buckley, C. E. Co., Leominster, Mass.
Buedingen, Wm. & Son, Rochester, N. Y.
Burt, F. N. Co., Inc., Buffalo, N. Y.
Cambridge Paper Box Co., Cambridge,
Mass. Acme Paper Box Co., Chicago, Ill.

Mass.
Casco Paper Box Co., Inc., Portland, Me.
Central States Paper & Bag Co., Inc., St.
Louis, Mo.
Clark, Geo. V. Co., Inc., Long Island City,
N. Y.

Cleveland Container Corp., Cleveland, Ohio.

Cleveland Container Corp., Cleveland, Ohio. Clover Paper & Transparent Boxes, Inc., Long Island City, N. Y.
Cournand, E. L. Inc., New York, N. Y.
Dennison Mfg. Co., Framingham, Mass.
Design Center, New York, N. Y.
Diamond Press, Inc., The Display-rite Div., New York, N. Y.
Dickerman Box Co., Cambridge, Mass Dorfman, A. & Co., Inc., New York, N. Y.
Earlville Paper Box Co., Earlville, N. Y.
Eggerss O'Flyng Co., Omaha. Nebr.

Eggerss O'Flyng Co., Omaha. Nebr.
Enbee Transparent Specialty Co., New
York, N. Y.
Everett Transparent Container Co., New

Everett Transparent Container Co., New York, N. Y.
Fairchild, E. E. Corp., Rochester, N. Y.
Fleishhacker Paper Box Co., San Francisco, Calif.
Flower City Specialty Co., Rochester, N. Y.
Friend Box Co., Danvers, Mass.
Frost Box Co., Inc., Pawtucket, R. I.
Globe Paper Box Co., Chicago, Ill.
Hampshire Paper Box Co., Florence, Mass.
Harvard Specialty Mfg. Corp., Cambridge,
Mass. Mass.

Henry, Ira L. Co., Watertown, Wis. High Point Paper Box Co., High Point, N. C.

Howell, F. M. & Co., Elmira, N. Y. Hygienal Co., New York, N. Y.

Humitube Mfg. Co., Peoria, Ill. J. L. Paper Box Co., Attleboro, Mass. Landowne, J. Co., The, Bklyn, N. Y. Lebanon Paper Box Co., Lebanon, Pa. Leominster Paper Box Co., Leominster, Mass. Mass. Lorscheider-Schang Co., Rochester, N. Y. Mason Box Co., Attleboro Falls, Mass. Meier, Joshua, New York, N. Y. Merrick Transparent Products, Long Island City, N. Y.
Meyer, Frank C. Co., Bklyn, N. Y.
Meyer, Jos. H. Bros., Bklyn, N. Y.
Miller, Walter P. Co., Inc., Phila., Pa.
National Transparent Box Co., Springfield, Mass. Old Dominion Box Co., Inc., Charlotte, N. C. N. C.
Parfait Powder Puff Co., Chicago, Ill.
Paper Package Co., Indianapolis, Ind.
Pedersen Mfg. Co., Los Angeles, Calif.
Plumly, Geo. W. Co., Phila., Pa.
Price, M. B. Associates, New York, N. Y.
Ritchie, W. C. & Co., Chicago, Ill.
Robinson, A. E. & Co., Chicago, Ill.
Rudnick, A. A. Inc., New York, N. Y.
Schleicher, F. J. Paper Box Co., St. Louis,
Mo. Schwartz, H. L. & Sons Mfg. Co., Benton Schwartz, H. L. & Sons Mfg. Co., Benton Harbor, Mich.
Seaman Box Co., Inc., New York, N. Y.
Shaw Paper Box Co., Meriden, Conn.
Shoup-Owens, Inc., Hoboken, N. J.
Siegel, A. L. Co., Inc., Newark, N. J.
Stecker Paper Box Co., Detroit, Mich.
Stein, A. & Co., Inc., Chicago, Ill.
Taylor Box Co., Providence, R. I.
Transparent Specialties Corp., Cleveland, Ohio

Onio
Union Specialty Co., Plainfield, N. J.
U. S. Envelope Co., P. P. Kellogg Div.,
Springfield, Mass.
Walco Plastics, E. Orange, N. J.
Wallace Paper Box Corp., New York, N. Y.
Warneke Paper Box Co., Denver, Colo.
Warner Bros. Co., The, Bridgeport, Conn.
Waterbury Paper Box Co., Inc., Waterbury,
Conn. Conn.

Ohio

Conn.
Weinman Bros., Chicago, Ill.
Williams Bros., St. Joseph, Mich.
Young, Douglas Inc., Pawtucket, R. I.
Zumbiel, C. W. Co., Cincinnati, Ohio

TIN LITHOGRAPHED

American Can Co., New York, N. Y American Can Co., New York, N. Y.
Bertels Metal Ware Co., Kingston, Pa.
Burdick & Son, Albany, N. Y.
Clark, Geo. V. Co., Inc., Long Island City,
N. Y.
Clark, J. L. Mfg. Co., Rockford, Ill.
Continental Can Co., New York, N. Y.
Crown Can Co., Phila., Pa.
Federal Tin Co., Inc., Baltimore, Md.
Fein's Tin Can Co., Inc., Bklyn, N. Y.
Heekin Can Co., Cincinnati, Ohio Fein's Tin Can Co., Inc., Bklyn, N. Y. Heekin Can Co., Cincinnati, Ohio Hudson, H. L., Co., The, New York, N. Y. Independent Can Co., Baltimore, Md. Ketcham, Howard Inc., New York, N. Y. Liberty Can & Sign Co., Lancaster, Pa. Litho Can Corp., Camden, N. J. Mason Can Co., Providence, R. I. National Can Corp., New York, N. Y. Owens-Illinois Can Co., Toledo, Ohio Pacific Can Co., San Francisco, Calif. Seymour Products. Co., The, Seymour Conn. Conn. Stuber & Kuck Co., Peoria, Ill. Western Can Co., San Francisco, Calif.

WINDOW

See Boxes, Paper Set-Up See Cartons, Folding & Display

CADDIES, CRACKERS

Ace Carton Corp., Cicero, Ill. American Can Co., New York, N. Y. Consolidated Paper Co., Monroe, Mich. Crook Paper Box Co., Kansas City, Mo.

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Crown Can Co., Phila., Pa. Densen-Banner Co., Ridgefield Park, N. J. Fibreboard Prods., Inc., San Francisco, Calif. Gair, Robert Co., Inc., New York, N. Y. Gardner-Richardson Co., Middletown, Ohio Gaylord Container Corp., St. Louis, Mo. Hinde & Dauch Paper Co., The, Sandusky, Ohio Ohio Inland Container Corp., Indianapolis, Ind. Interstate Folding Box Co., Middletown,

Ohio Morris Paper Mills, Chicago, Ill. National Can Corp., New York, N. Y. Schoettle, Edwin J. Co., Phila., Pa. Schulz, A. Geo. Co., Milwaukee, Wis. Texas Paper Box Mfg. Co., Dallas, Texas Waldorf Paper Products Co., St. Paul

CAN SEALING COMPOUNDS

Ams, Max Machine Co., The, Bridgeport Dewey & Almy Chemical Co., Cambridge B., Mass. Union Carbide & Carbon Corp., New York, N. Y.

CANS

American Can Co., New York, N. Y. Cambridge Paper Box Co., Cambridge,

Mass.

Minn.

Canister Co., The, Phillipsburg, N. J. Cin-Made Corp., The, Cincinnati, Ohio Cleveland Container Co., The, Cleveland, Ohio Continental Can Co., New York, N. Y. Fibreboard Prods., Inc., San Francisco, Calif. Gardner-Richardson Co., Middletown, Ohio Gates Paper Co., Ltd., The, Los Angeles, Calif. Indianapolis Paper Container Co., Indianapolis, Ind. apolis, Ind.
Menasha Products Co., The, Menasha, Wis.
Pictorial Paper Package Corp., Aurora, Ill.
Purepac Corp., New York, N. Y.
Randolph Paper Box Co., Richmond, Va.
R. C. Can Co., St. Louis, Mo
Ritchie, W. C. & Co., Chicago, Ill.
Sefton Fibre Can Co., St. Louis, Mo.
Shoup-Owens, Inc., Hoboken, N. J.
Sutherland Paper Co., Kalamazoo, Mich.
Waldorf Paper Products Co., St. Paul,
Minn.

RIGID TRANSPARENT

Cambridge Paper Box Co., Cambridge, Mass. Celluplastic Corp., Newark, N. J. Central States Paper & Bag Co., St. Louis, Mo.
Cin-Made Corp., The, Cincinnati, Ohio
Clark, Geo. V. Co., Inc., Long Island City,
N. Y.
Henry, Ira, L. Co., Watertown, Wis.
Levy, Maurice, New York. N. Y.
Neostyle, Inc., Chicago, Ill.
Ritchie, W. C. & Co., Chicago, Ill.
Seaman Box Co., Inc., New York, N. Y.
Transparent Specialties Corp., Cleveland,
Ohio Walco Plastics, East Orange, N. J. Weinman Bros., Chicago, Ill.

American Can Co., New York, N. Y. Armstrong Paint & Varnish Works, Chicago, 111. Bennett, E. W. & Co., San Francisco, Calif. Bertels Metal Ware Co., Inc., Kingston, Pa. Buckeye Stamping Co., The, Columbus, Ohio

Burdick & Son, Albany, N. Y. Bushwick Can Co., Inc., Bklyn, N. Y. Cadillac Can Co., Mt. Clemens, Mich. Cans, Inc., Chicago, Ill.

Central Can Co., Inc., Chicago, Ill.
Chesapeake Can Co., Inc., Crisfield, Md.
Clark, Geo. V. Co., Inc., Long Island City,
N. Y.
Clark, J. L. Mfg. Co., Rockford, Ill.
Clarke Can Co., Phila., Pa.
Columbia Specialty Co., Inc., Baltimore,
Md. Conneaut Can Co., Inc., Conneaut, Ohio Continental Can Co., New York, N. Y. Cordiano Can Co., Inc., Bklyn., N. Y. Crown Can Co., Phila., Pa.

Davies Can Co., The, Cleveland, Ohio Eagle Can Co., The, Cleveland, Ohio Eagle Can Co., Somerville, Mass. Eastern Can Co., Inc., Bklyn, N. Y. Ellis, Geo. D. & Sons, Inc., Phila., Pa. Federal Tin Co., Inc., Baltimore, Md. Fein's Tin Can Co., Inc., Bklyn, N. Y. General Can Co., Chicago, Ill.

Giles Can Co., Chicago, Ill.

Grand Sheet Metal Works, Chicago, Ill.

Grand Sheet Metal Works, Chicago, Ill.

Grimley, Frank J., San Francisco, Calif. Heekin Can Co., Cincinnati, Ohio Hudson, H. L. Co., Bklyn, N. Y. Independent Can Co., Bklyn, N. Y. Liberty Can & Sign Co., Lancaster, Pa. Lincoln Can Mfg. Corp., Bklyn, N. Y. Litho Can Corp., Camden, N. J. Manufacturers Can Co., Chicago, Ill. Mason Can Co., Providence, R. I. Melvina Can Corp., New York, N. Y. National Can Corp., New York, N. Y. National Can Corp., New York, N. Y. National Can Corp., The, Malden, Mass. Olive Can Co., Chicago, Ill.

Owens-Illinois Can Co., Toledo, Ohio Pacific Can Co., San Francisco, Calif. Phelps Can Co., Baltimore, Md. Philadelphia Can Co., Phila., Pa. Platt Corp., Baltimore, Md. Robertson Steel & Iron Co., Springfield, Ohio Conneaut Can Co., Inc., Conneaut, Ohio Continental Can Co., New York, N. Y. Ohio
Sexton Can Co., Inc., Everett, Mass.
Seymour Products Co., The, Seymour, Conn. Conn.
Standard Can Co., Chicago, Ill.
Steel & Tin Prods. Co., Inc., Baltimore, Md.
Stuber & Kuck Co., Peoria, Ill.
Superior Can Co., Inc., Bklyn, N. Y.
Thompson Can Co., Dallas, Tex.
Victor Metal Products Corp., Bklyn, N. Y.
Vulcan Stamping & Mfg. Co., Inc., Bell-

TIN

(Cellulose Window)

wood, Ill

Clark, Geo. V. Co., Inc., Long Island City, N. Y.

PAPER

(For Bulk Ice Cream)

Morris Paper Mills, Chicago, Ill. National Folding Box Co., New Haven, Sutherland Paper Co., Kalamazoo, Mich.

CARTONS

CAN & BOTTLE CARRIERS

American Coating Mills, Inc., Elkhart, Ind. Ashtabula Corrugated Box Co., The, Ashtabula, Ohio Tabula, Onio
Brown & Bailey Co., Phila., Pa.
Chicago Carton Co., Chicago, Ill.
Container Corp. of America, Chicago, Ill.
Continental Folding Paper Box Co., Inc., Ridgefield, N. Federal Carton Corp., New York, N. Y.
Fibreboard Products Inc., San Francisco, Calif. Fort Orange Paper Co., Castleton-on-Hud-son, N. Y. Fort Wayne Corrugated Paper Co., Fort Wayne, Ind. Gair, Robert Co., Inc., New York, N. Y. Gardner-Richardson Co., Middletown, Ohio Grand Rapids Paper Box Co., Grand Rapids, Mich. International Folding Paper Box Co., Inc.,

N. Bergen, N. J.
Interstate Folding Box Co., The, Middle-

town, Onio town, Onio
Menasha Products Co., The, Menasha, Wis.
Milprint, Inc., Milwaukee, Wis.
Morris Paper Mills, Chicago, Ill.
Ohio Boxboard Co., The, Rittman, Ohio
Owens-Illinois Glass Co., Toledo, Ohio
Reynolds Metals Co., Richmond, Va.
Richardson Taylor-Globe Corp., Cincinnati,

Robertson Paper Box Co., Inc., Montville,

Rossotti Lithographing Co., Inc., N. Bergen, N. J. Sample-Durick Co., Inc., Indian Orchard, Bergen, N.

Warner Bros., Co., Bridgeport, Conn.

FOLDING & DISPLAY

Ace Carton Corp., Cicero, Ill. Addison Lithographing Co., Rochester, N. Y. American Box Board Co., Grand Rapids, Mich.

American Coating Mills, Inc., Elkhart, Ind. Andrews, P. L. Corp., Bklyn, N. Y. Atlantic Carton Corp., Norwich, Conn. Badger Carton Co., Milwaukee, Wis. Bloomer Bros. Co., Newark, N. Y.

Bloomer Bros. Co., Newark, N. Y.
Blum Folding Paper Box Co., Inc., The,
Bklyn, N. Y.
Brooks Bank Note Co., Springfield, Mass.
Brown & Bailey Co., Phila., Pa.
Burt, F. N. Co., Inc., Buffalo, N. Y.
Campbell Box & Tag Co., South Bend, Ind.
Chicago Carton Co., Chicago, Ill.
Consolidated Paper Co., Monroe, Mich.
Container Corp. of America, Chicago, Ill.
Continental Folding Paper Box Co., Inc.,
Ridgefield, N. I.

Continental Folding Paper Box Co., Inc., Ridgefield, N. J. Dennison Mfg. Co., Framingham, Mass. Densen-Banner Co., Ridgefield Park, N. J. Eggerss O'Flyng Co., Omaha, Nebr. Empire Box Corp., Chicago, Ill. Fairchild, E. E. Corp., Rochester, N. Y. Federal Carton Corp., New York, N. Y. Fibreboard Prods., Inc., San Francisco, Calif. Fitzhugh, Wm. W. Inc., Bklyn, N. Y. Flour City Paper Box Co., Minneapolis, Minn.

Minn.

Minn.
Folding Boxes, Inc., Manchester, Conn.
Forbes Lithograph Co., The, Boston, Mass.
Fort Orange Paper Co., Castleton-onHudson, N. Y.
Fox, C. J. Co., The, Providence, R. I.
Gair, Robert Co., Inc., New York, N. Y.
Gardner-Richardson Co., Middletown, Ohio
Gaylord Container Corp., St. Louis, Mo.
Gereke-Allen Carton Co., St. Louis, Mo.
Globe Paper Box Mfg. Co., St. Paul, Minn.
Grand-City Container Corp., New York,
N. Y.
Grand Papids Paper Box Co., Grand

Grand Papids Paper Box Co., Grand Rapids, Mich.

Grant Paper Box Co., Pittsburgh, Pa. Great Lakes Box Co., Cleveland, Ohio Guilford Folding Box Co., The, Baltimore, Md.

Hashagen Paper Box Co., Washington, D. C. High Point Paper Box Co., Inc., High Point, N. C.

Hollywood Paper Box Corp., Hollywood,

Howell, F. M. & Co., Elmira, N. Y. Indianapolis Paper Container Co., Indianapolis, Ind.

International Folding Paper Box Co., Inc., N. Bergen, N. J. Interstate Folding Box Co., The, Middle-

town, Ohio

Lebanon Paper Box Co., Lebanon, P. Lindley Box & Paper Co., Marion, Ind. Maryland Paper Box Co., Baltimore, Md. Menasha Prod. Co., The, Menasha, Wis. Michigan Carton Co., Battle Creek, Mich.

Addresses of companies listed appear on pages 628-634

Milprint, Inc., Milwaukee, Wis. Morris Paper Mills, Chicago, Ill. Myers, J. & P. B., Inc., Jersey City, N. J. National Folding Box Co., New Haven,

Conn.

Conn.

National Metal Edge Box Co., Phila., Pa.
National Paper Co., Atlanta, Ga.
Neumann, Robert Co., Cincinnati, Ohio
Nevins-Church Press, The, New York, N. Y.
Ohio Boxboard Co., The, Rittman, Ohio
Old Dominion Box Co., Charlotte, N. C.
Paper Package Co., Indianapolis, Ind.
Pictorial Paper Package Corp., Aurora, Ill.
Randolph Paper Box Co., Richmond, Va.
Reynolds Metals Co., Richmond, Va.
Richardson Taylor-Globe Corp., Cincinnati, Ohio
Robertson Paper Box Co., Inc., Montville.

Robertson Paper Box Co., Inc., Montville, Conn.

Rochester Folding Box Co., Rochester,

N. Y.
Rossotti Lithographing Co., N. Bergen, N. J.
Sample-Durick Co., Indian Orchard, Mass.
Scandore Paper Box Co., Inc., Bklyn, N. Y.
Schmidt Lithograph Co., San Francisco, Calif.

Schoettle, Edwin J. Co., Phila., Pa. Schultz Folding Box Co., Filia., Fa. Schultz Folding Box Co., St. Louis, Mo. Schulz, A. Geo. Co., Milwaukee, Wis. Self-Locking Carton Co., Chicago, Ill. Shellmar Products Co., Mt. Vernon, Ohio Shuttleworth Carton Co., Inc., New York, N. V.

Simplex Paper Box Corp., Lancaster, Pa.
Standard Paper Box Corp., Los Angeles, Calif

Stecher-Traung Lithograph Corp., Roch-

Stecher-Traung Lithograph Corp., Rochester, N. Y.
Superior Folding Box Co., St. Louis, Mo.
Sutherland Paper Co., Kalamazoo, Mich Texas Paper Box Mfg. Co., Dallas, Tex.
Toledo Paper Box Co., Toledo, Ohio Trenton Folding Box Co., Trenton, N. J.
Trum, E. J., Inc., Bklyn, N. Y.
United Paperboard Co., New York, N. Y.
United States Printing & Lithograph Co.
Cincinnati. Ohio

Cincinnati, Ohio Waldorf Paper Products Co., St. Paul, Minn.

Warner Brothers Co., The, Bridgeport, Conn. Western Paper Box Co., Oakland, Calif. Wolverine Carton Co., Grand Rapids, Mich. Zumbiel, C. W. Co., Cincinnati, Ohio.

WAXED & PARAFFINED

American Box Board Co., Grand Rapids, Mich.
Atlantic Carton Corp., Norwich, Conn.
Bloomer Bros. Co., Newark, N. Y.
Brooks Bank Note Co., Springfield, Mass.
Brown & Bailey Co., Phila., Pa.
Chicago Carton Co., Chicago, III.
Consolidated Paper Co., Monroe, Mich.
Container Corp. of America, Chicago III.
Densen-Banner Co., Ridgefield Park, N. J.
Federal Carton Corp., New York. N. Y.
Fibreboard Prods., Inc., San Francisco,
Calif. Mich. Calif.

Ft. Orange Paper Co., Castleton-on-Hudson, Fr. Orange Paper Co., Castleton-on-Hudson, N. Y. Fox, C. J. Co., The, Providence, R. I. Gair, Robert Co., Inc., New York, N. Y. Gardner-Richardson Co., The, Middletown, Ohio

Gates Paper Co., Ltd., The, Los Angeles, Calif.

Gaylord Container Corp., St. Louis, Mo. Grant Paper Box Co., Pittsburgh, Pa. High Point Paper Box Co., Inc., High Point,

Hollywood Paper Box Corp., Hollywood,

Calif. Interstate Folding Box Co., Middletown, Ohio

Lindley Box & Paper Co., Marion, Ind. Menasha Products Co., The, Menasha, Wis.

Michigan Carton Co., Battle Creek, Mich.

Morris Paper Mills, Chicago, Ill. Ohio Boxboard Co., The, Rittman, Ohio Old Dominion Box Co., Charlotte, N. C. Richardson Taylor-Globe Corp., Cincinnati, Ohio

Robertson Paper Box Co., Montville, Conn. Schmidt Lithograph Co., San Francisco,

Schoettle, Edwin J. Co., Phila., Pa. Schulz, A. Geo. Co., Milwaukee, Wis. Shuttleworth Carton Co., Inc., New York

Sutherland Paper Co., Kalamazoo, Mich. United Paperboard Co., New York, N. Y. Waldorf Paper Products Co., St. Paul

Warner Bros. Co., The, Bridgeport, Conn. Zumbiel, C. W. Co., Cincinnati, Ohio

CAST RESIN PLASTICS

See Plastic Materials (Cast Phenol)

CELLOPHANE

du Pont de Nemours E. I. & Co., Inc., Wilmington, Del. Sylvania Industrial Corp., New York, N. Y.

CHARMS

(Stringing)

Eppy, Samuel Inc., New York, N. Y.

CHIPBOARD

See Box Board, Folding & Set-Up

CLOSURE LINERS

Aluminum Co. of America, Pittsburgh, Pa. Anchor Hocking Glass Corp., Lancaster,

Armstrong Cork Co., Lancaster, Pa. Bernardin Bottle Cap Co., Inc., Evansville,

Bond Mfg. Corp., Inc., Wilmington, Del. Dewey & Almy Chemical Co., Cambridge, Mass

Johnston Tin Foil & Metal Co., The, St. Louis, Mo.
Mundet Cork Corp. (Closure Div.), Bklyn,

N. Y. Union Carbide & Carbon Corp., New York,

CLOSURE SEALING COMPOUNDS

Dewey & Almy Chemical Co., Cambridge, Mass.

Dispersions Process, Inc., New York, N. Y. Naugatuck Chemical Div. of U. S. Rubber Co., New York, N. Y.
Pyroxylin Products, Inc., Chicago, Ill.

CLOSURES

APPLICATOR

(Glass, Rod, Brush, Dropper, Swab)

Anchor Hocking Glass Corp., Lancaster,

Armstrong Cork Co., Lancaster, Pa. Brockway Glass Co., Inc., Brockway, Pa. Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.

Consolidated Fruit Jar Co., New Brunswick, N. J.
Double Duty Products, Inc., Cleveland,

Ohio Glass Industries, Inc., New York, N. Y. Grigoleit Co., The, Decatur, Ill.

Kimble Glass Co., Vineland, N. J. Mundet Cork Corp. (Closure Div.), Bklyn,

N. Y. Owens-Illinois Glass Co., Toledo, Ohio Owens-Illinois Pacific Coast Co., San Francisco, Calif. Pennsylvania Glass Products Co., Pitts-

burgh, Pa. Super-Seal Container Corp., Washington, D. C.

Terkelsen Machine Co., Boston, Mass.

BAG

(Thermo-Plastic)

Betner, Benj. C. Co., Devon, Pa.

CORK

See Corks

CROWN

Armstrong Cork Co., Lancaster, Pa. Bernardin Bottle Cap Co., Inc., Evansville, Ind.
Bond Mfg. Corp., Inc., Wilmington, Del.
Continental Can Co., New York, N. Y.
Crown Cork & Seal Co., The, Baltimore,

Mundet Cork Corp. (Closure Division), Bklyn, N. Y.

GLASS

Anchor Hocking Glass Corp., Lancaster, Armstrong Cork Co., Lancaster, Pa. Bernardin Bottle Cap Co., Inc., Evansville, Ind.
Brockway Glass Co., Inc., Brockway, Pa.
Carr-Lowrey Glass Co., Baltimore, Md.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Kimble Glass Co., Vineland, N. J.
Owens-Illinois Glass Co., Toledo, Ohio
Super-SealContainerCorp., Washington, D.C.
Swindell Bros., Baltimore, Md.

METAL

Advanced Closures Corp., Bklyn, N. Y. Ajax Bottle Cap Corp., Bklyn, N. Y. Aluminum Company of America, Pittsburgh, Pa. Aluminum Container Corp., Fulton, N. Y. Aluminum Goods Mfg. Co., Manitowoc, Aluminum Seal Co., New Kensington, Pa. American Star Cork Co., Inc., Bklyn, N. Y. Anchor Hocking Glass Corp., Lancaster, Ohio Aridor Company, Chicago, Ill. Armstrong Cork Co., Lancaster, Pa. Bernardin Bottle Cap Co., Inc., Evansville, Brass Goods Mfg. Corp., Bklyn, N. Y. Bridgeport Metal Goods Mfg. Co., Bridgeport, Conn.
Canister Co., The, Phillipsburg, N. J.
Carvin Bottle Cap Corp., Bklyn, N. Y.
Clark, J. L. Mfg. Co., Rockford, Ill.
Columbia Specialty Co., Inc., Baltimore,

Md. Crown Cork & Seal Co., The, Baltimore, Md. Eastern Cap & Closure Corp., Baltimore, Md. Md.
Ellis, George D., & Sons, Inc., Phila., Pa.
Empire Metal Cap Co., Inc., Bklyn, N. Y.
Fabart Instrument Co., Chicago, Ill.
Federal Tool Corp., Chicago, Ill.
General Can Co., Chicago, Ill.
Guardian Safety Seal Co., Chicago, Ill.
Gutmann, Ferdinand & Co., Bklyn, N. Y.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Henlopen Mfg. Co., Lewes, Del.
Keystone Can Co., Columbia. Pa. Keystone Cap Co., Columbia, Pa.

Mundet Cork Corp. (Closure Div.), Bklyn., National Can Corp., New York, N. Y.

National Seal Corp., Bklyn, N. Y. Owens-Illinois Glass Co., Toledo, Ohio Owens-Illinois Pacific Coast Co., San Francisco, Cal. Phoenix Metal Cap Co., Chicago, Ill. Phoenix Metal Cap Co., Chicago, Ill.
Prescott, J. L. Co., Passaic, N. J.
Scovill Mfg. Co., Waterbury, Conn.
Sterling Seal Co., Erie, Pa.
Swan Metallic Cap Co., Chicago, Ill.
Trio Metal Cap Co., Chicago, Ill.
Upressit Products Corp., New York, N. Y.
Vacuum Seal Co., Jersey City, N. J.
Western Stopper Co., Inc., San Francisco,
Calif

Calif. West Penn Mfg. & Supply Corp., Bracken-

ridge, Pa. White Cap Co., Chicago, Ill. Williams Sealing Corp., Decatur, Ill.

METAI. (Tamper-Proof)

Aluminum Seal Co., New Kensington, Pa. Anchor Hocking Glass Corp., Lancaster, Ohio

Ohio
Canister Co., The, Phillipsburg, N. J.
Crown Can Co., Phila., Pa.
Guardian Safety Seal Co., Chicago, Ill.
Gutmann, Ferdinand & Co., Bklyn, N. Y.
Na-Mac Products Corn., Hollywood, Calif.
National Seal Corp., Bklyn, N. Y.
Owens-Illinois Pacific Coast Co., San Francisco Calif. cisco, Calif. Phoenix Metal Can Co., Chicago, Ill. Williams Sealing Corp., Decatur, Ill.

MOLDED PLASTIC

Anchor Hocking Glass Corp., Lancaster, Ohio Armstrong Cork Co., Lancaster, Pa. Auburn Button Works, Inc., Auburn, N. Y. Boonton Molding Co., Boonton, N. J. Carlson Autopress Corp., Rockledge, Pa. Cavalier Cap Corp., Norfolk, Va. Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.

Dodge Cork Co., Lancaster, Pa.
Federal Tool Corp., Chicago, Ill.
General Electric Co., Plastics Dept., Pittsfield, Mass. field, Mass. Grigoleit Co., The, Decatur, Ill. Kurz-Kasch, Inc., Davton, Ohio Mack Molding Co., Wavne, N. I. Mundet Cork Corp. (Closure Div.), Bklyn,

Northern Industrial Chem. Co., Boston,

Mass. Owens-Illinois Glass Co., Toledo, Ohio Owens-Illinois Pacific Coast Co., San Fran-

cisco, Calif. Phoenix Metal Cap Co., Chicago, Ill. Plastic & Die Cast Prod. Corp., Los Angeles, Calif

les, Calif Plastics, Inc., Bradley Beach, N. J. Standard Molding Co., Baltimore, Md. Terkelsen Machine Co., Boston, Mass. Victor Metal Products Corp., Bklvn, N. Y. Waterbury Button Co., The, Waterbury, Conn.

Watertown Mfg. Co., Watertown, Conn. Wheeling Stamping Co., Wheeling, W. Va. Williams Sealing Corp., Decatur, Ill.

SECONDARY (Foil)

Aluminum Seal Co., New Kensington, Pa. Reynolds Metals Co., Richmond, Va.

(Viscose)

Armstrong Cork Co., Lancaster, Pa. Celon Co., The, Madison, Wis. du Pont de Nemours, E. I. & Co., Inc., Wilmington, Del.
Gutmann, Ferdinand & Co., Bklyn, N. Y.
Sylvania Industrial Corp., New York, N. Y.

FOR VACUUM SEALING

Aluminum Seal Co., New Kensington, Pa. Anchor Hocking Glass Corp., Lancaster, Ohio

Aridor Co., The, Chicago, Ill. Bernardin Bottle Cap Co., Inc., Evansville, Ind. Crown Cork & Seal Co., The, Baltimore, Md. Dewey & Almy Chemical Co., Cambridge B., Mass. B., Mass.
Guardian Safety Seal Co., Chicago, Ill.
Gutmann, Ferdinand & Co., Bklyn, N. Y.
Hazel-Atlas Glass Co., Wheeling, W. Va.
National Seal Corp., Bklyn, N. Y.
Owens-Illinois Glass Co., Toledo, Ohio Owens-Illinois Pacific Coast Co., San Fran-

Owens-Illinois Pacific Coast Co., San Francisco, Calif.
Phoenix Metal Cap Co., Chicago, Ill.
Super-SealContainerCorp., Washington, D.C
White Cap Co., Chicago, Ill.
Williams Sealing Corp., Decatur, Ill.

COATINGS, PROTECTIVE

American Products Mfg. Co., New Orleans,

Atlas Powder Co., Zapon-Keratol Div., Stamford, Conn. Atlas Powder Co., Zapon-Brevolite Div., Chicago, Ill.

Chicago, Ill.
Ault & Wiborg Corp., Subsidiary of Interchemical Corp., New York, N. Y.
Bakelite Corp., New York, N. Y.
Burt, F. N. Co., Inc., Buffalo, N. Y.
Chemical Color & Supply Co., Div. General Printing Ink Corp., Chicago, Ill.
Clover Leaf Paint & Varnish Corp., Long Island City, N. Y.
Continental Lithograph Corp., Bklyn, N. Y.
Dispersions Process. Inc. New York N. Y.

Dispersions Process, Inc., New York, N. Y. Dow Chemical Co., The, Midland, Mich. duPont de Nemours, E. I. & Co., Inc., Wil-

mington, Del.

Durez Plastics & Chemicals, Inc., N.
Tonawanda, N. Y.

Tonawanda, N. Y.
Eagle Printing Ink Co., Div. General
Printing Ink Corp., New York, N. Y.
Egyptian Lacquer Mfg. Co., The, New
York, N. Y.
Fales Chemical Co., Inc., The, Cornwall
Landing, N. Y.
General Printing Ink Corp., New York,
N. Y.
Coordisch B. F. Co. The Algebra Ohio.

Goodrich, B. F. Co., The, Akron, Ohio Huber, J. M. Inc., New York, N. Y.

Huber, J. M. Inc., New York, N. Y.
International Printing Ink, Div. Interchemical Corp., New York, N. Y.
Levey, Fred'k H. Co., Inc., New York, N. Y.
Maas & Waldstein Co., Newark, N. J.
McCoy Paper Converters, Phila., Pa.
Morrill, Geo H. Co., Div. General Printing
Ink Corp., New York, N. Y.
National Adhesives Div. of National Starch
Prods., Inc., New York, N. Y.
Naugatuck Chemical, Div. of U. S. Rubber
Co., New York, N. Y.
Plastics Finishing Corp., Bklyn, N. Y.

Plastics Finishing Corp., Bklyn, N. Y.
Pope & Gray, Inc., New York, N. Y.
Pyrotex Leather Co., Leominster, Mass.
Pyroxylin Products Inc., Chicago, Ill.
Reilly Tar & Chemical Corp., Indianapolis,
Ind.

Ullman, Sigmund Co., Div. General Print-ing Ink Corp., New York, N. Y. Union Carbide & Carbon Corp., New York,

COMPACTS, PLASTIC

See Molders, Plastic

CONTAINERS

MCLDED PULP

Chaspec Mfg. Co., New York, N. Y. Holed-Tite Packing Corp., Herkimer, N. Y. Keyes Fibre Co., Waterville, Me Pulp Reproduction Co., Milwaukee, Wis. Read, Robert E., Inc., Dexter, N Y. Self-Locking Carton Co., Chicago, Ill.

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PAPER (Liquid-Holding)

American Can Co., New York, N. Y.
American Paper Goods Co., Kensington,
Com.
Betner, Benj. C. Co., Devon, Pa.
Cupples-Hesse Corp., St. Louis, Mo.
Dixie-Vortex Co., Easton, Pa.
Fibreboard Prods., Inc., San Francisco,
Calif.
Gair, Robert Co., Inc., New York, N. Y.
Gardner-Richardson Co., The, Middletown, Ohio
Interstate Folding Box Co., The, Middletown, Ohio
Lily Tulip Cup Corp., New York, N. Y.
Mono Service Co., Newark, N. J.
Schoettle, Edwin J. Co., Phila., Pa.
Sutherland Paper Co., Kalamazoo, Mich.
Sweetman, Geo. H. Inc., Cambridge, Mass.

PAPER (Milk)

American Can Co., New York, N. Y.
American Paper Bottle Co., Toledo, Ohio
American Scalcone Corp., New York, N. Y.
Brown & Bailey Co., Phila., Pa.
Continental Folding Paper Box Co., Inc.,
Ridgefield, N. J.
Ex-Cell-O Corp., Detroit, Mich.
Fibreboard Prods., Inc., San Francisco, Calif.
Gair, Robert Co., Inc., New York, N. Y.
Gardner-Richardson Co., The, Middletown, Ohio
Menasha Products Co., The, Menasha, Wis.
Reed Container Sales Corp., New York,
N. Y.
Single-Service Containers Inc., Chelsea,
Mass.
Sutherland Paper Co., Kalamazoo, Mich.

PAPER (Nesting)

American Lace Paper Co., Milwaukee, Wis. American Paper Goods Co., The, Kensington, Conn.
Bloomer Bros. Co., Newark, N. Y. Container Corp. of America, Chicago, Ill. Cupples-Hesse Corp., St. Louis, Mo. Densen-Banner Co., Ridgefield Park, N. J. Dixie-Vortex Co., Easton, Pa. Fleisig, H. Inc., New York, N. Y. Lily Tulip Cup Corp., New York, N. Y. Menasha Products Co., The, Menasha, Wis. Mono Service Co., Newark, N. J. Old Dominion Box Co., Charlotte, N. C. Randolph Paper Box Co., Richmond, Va. Schoettle, Edwin J. Co., Phila., Pa. Schulz, A. Geo. Co., Milwaukee, Wis. Sutherland Paper Co., Kalamazoo, Mich. Warner Bros. Co., The, Bridgeport, Conn.

SHIPPING

See Boxes, Corrugated & Solid Fibre

CONVEYORS

Alvey-Ferguson Co., The, Cincinnati, Ohio Chain Belt Co., Milwaukee, Wis. Colton, Arthur Co., Detroit, Mich.
Consolidated Packaging Machinery Corp., Buffalo, N. Y.
Container Equipment Corp., Newark, N. J.
Crown Cork & Seal Co., The, Baltimore, Md.
Ferguson, J. L. Co., Joliet, Ill.
Gump, B. F. Co., Chicago, Ill.
Horix Manufacturing Co., Pittsburgh, Pa.
Hulbert Engineering Corp., Watertown, Wis.
Jeffrey Mfg. Co., The, Columbus, Ohio
Kiefer, Karl Machine Co., The, Cincinnati, Ohio
Lamson Corp., Syracuse, N. Y.

Link-Belt Co., Chicago, Ill.
Logan Co., Louisville, Ky.
Mathews Conveyer Co., Ellwood City, Pa.
McGuire, Walter, Bklyn, N. Y.
Rapids Standard Co., Inc., Grand Rapids,
Mich.

Standard Conveyor Co., St. Paul, Minn. Standard-Knapp Corp., Portland, Conn. Triangle Package Machinery Co., Chicago, Ill.

U. S. Automatic Box Machinery Co. Inc., Boston, Mass.
U. S. Bottlers Machinery Co., Chicago, Ill.

CONVEYORS, PORTABLE Alvey-Ferguson Co., The, Cincinnati, Ohio

Container Equipment Corp., Newark, N. J. Food Machinery Corp., Sprague-Sells Div., Hoopeston, Ill.
Hulbert Engineering Corp., Watertown, Wis.
Jeffrey Mfg. Co., The, Columbus, Ohio Lamson Corp., Syracuse, N. Y.
Link-Belt Co., Chicago, Ill.
Logan Co., Louisville, Kv.
Mathews Conveyor Co., Ellwood City, Pa.
Paslode Co., Chicago, Ill.
Rapids Standard Co., Inc., Grand Rapids, Mich.
Scientific Filter Co., New York, N. Y.
Standard Conveyor Co., St. Paul, Minn.
Syntron Co., Homer City, Pa.
U. S. Bottlers Machinery Co., Chicago, Ill.

CORD, CELLULOSE

Dennison Mfg. Co., Framingham, Mass. Fibre Cord Co., New York, N. Y. Sylvania Industrial Corp., New York, N. Y.

CORK SHEETS

(Paper-Backed)
Bond Mfg. Corp., Inc., Wilmington, Del.
Mundet Cork Corp. (Closure Div.), Bklyn,

CORKS

Armstrong Cork Co., Lancaster, Pa.
Dodge Cork Co., Inc., Lancaster, Pa.
Mundet Cork Corp. (Closure Div.), Bklyn,
N. Y.

ALUMINUM TOP

Armstrong Cork Co., Lancaster, Pa. Consolidated Fruit Jar Co., New Brunswick, N. J. Dodge Cork Co., Inc., Lancaster, Pa.

MOLDED TOP

Armstrong Cork Co., Lancaster, Pa.
Davies, Harry Molding Co., Chicago, Ill.
Dodge Cork Co., Inc., Lancaster, Pa.
Mack Molding Co., Wayne, N. J.
Mundet Cork Corp. (Closure Div.), Bklyn,
N. Y.

WOOD TOP

Armstrong Cork Co., Lancaster, Pa. Dodge Cork Co., Inc., Lancaster, Pa. Mundet Cork Corp. (Closure Div.), Bklyn, N. Y.

DECALCOMANIA

American Decalcomania Co., Chicago, Ill. Bender, H. P., New York, N. Y. Dennison Mfg. Co., Framingham, Mass. Dobeckmun Co., The, Cleveland, Ohio Foxon Co., The, Providence, R. I. Howell, F. M. & Co., Elmira, N. Y. Meyercord Co., Chicago, Ill. Palm, Fechteler & Co., New York, N. Y.

DESIGNERS

See Package Design Consultants (Independent Organizations)

DIES, PAPER CUTTING

Helmold, J. F. & Bro., Inc., Chicago, Ill. Indianapolis Paper Container Co., Indianapolis, Ind. Inman Mfg. Co., Inc., Amsterdam, N. Y. Lansky Die Cutting Co., New York, N. Y. U. S. Finishing & Mfg. Co., Chicago, Ill.

DISPENSERS, PUMP

See Sprayers

DISPLAY, MOTION, MECHANISMS

DeNina, James Andrew, New York, N. Y. Displayers, The, New York, N. Y. Gregory Motors, Inc., New York, N. Y. Jay Advertising Co., Lancaster, Pa. Mergenthaler Linotype Co., Bklyn, N. Y. Motion Displays, Inc., Bklyn; N. Y. National Carbon Co., Inc., New York, N. Y. Ruckelshaus & Co., Inc., New York, N. Y. Speedway Mfg. Co., Cicero, Ill. Stensgaard, W. L. & Assocs., Chicago, Ill.

DISPLAY MOUNTING AND FINISHING

Arvey Corp., Chicago, Ill.
Badger Merchandising Displays, Inc., Milwaukee, Wis.
Bronzart Metals Co., New York, N. Y.
Chaspec Mfg. Co., New York, N. Y.
Display Finishing Co., Inc., Long Island City, N. Y.
Fibreboard Prods., Inc., San Francisco, Calif.
Lansky Die Cutting Co., New York, N. Y.
Lithographers' Finishing Co., Inc., New York, N. Y.
Merit Display Card Co., New York, N. Y.
Plastics Finishers Corp., Bklyn, N. Y.
Schmidt Litho. Co., San Francisco, Calif.
Schoettle, Edwin J. Co., Philadelphia, Pa.
Schutz, Thom. A. Co., Chicago, Ill.
U. S. Finishing & Mfg. Co., Chicago, Ill.

DISPLAYS

COUNTER

Ace Carton Corp., Cicero, Ill.
Addison Lithographing Co., Rochester, N. Y.
Advertising Metal Display Co., Chicago, Ill.
Arrow Mfg. Co., Inc., Hoboken, N. J.
Arvey Corp., Chicago, Ill.
Badger Merchandising Displays, Inc., Milwaukee, Wis.
Blum Folding Paper Box Co., Inc., Bklyn, N. Y.
Bransby & Hewitt, Inc., New York, N. Y.
Bronzart Metals Co., New York, N. Y.
Brooks Bank Note Co., Springfield, Mass.
Burt, F. N. Co., Inc., Buffalo, N. Y.
Calvert Lithographing Co., Detroit, Mich.
Casselman, T. E., Inc., New York, N. Y.
Clark, Geo. V. Co., Inc., Long Island City, N. Y.
Consolidated Box Co., Inc., Tampa, Fla.
Consolidated Lithographing Corp., Bklyn, N. Y.

N.Y.

Consolidated Box Co., Inc., Tampa, Fla.
Consolidated Lithographing Corp., Bklyn,
N.Y.
Container Corp. of America, Chicago, Ill.
DeNina, James Andrew, New York, N. Y.
Densen-Banner Co., Ridgefield Park, N. J.
Diamond Press Inc., The, Display-Rite
Div., New York, N. Y.
Display Finishing Co., Inc., Long Island
City, N. Y.

Addresses of companies listed appear on pages 628-634

Displayers, The. New York, N. Y. Edwards & Deutsch Lithographing Co., Chicago, Ill. Excelsior Paper Specialties Co., New York,

RXCEISIOF FAPEL SPECIALICS C. N. Y.
Pairchild, E. E. Corp., Rochester, N. Y.
Federal Carton Corp., New York, N. Y.
Fibreboard Prods., Inc., San Francisco, Calif.

Calif.

Fitzhugh, Wm. W. Inc., Bklyn, N. Y.

Forbes Lithograph Co., The, Boston, Mass.
Fox, C. J. Co., The, Providence, R. I.
Gair, Robert Co., Inc., New York, N. Y.

Gaylord Container Corp., St. Louis, Mo.
Grand-City Container Corp., New York, N. Y.

Gray Wire Specialty Co., The, Cleveland, Ohio

Harlich Mfg. Co., Mastercraft Div., Chicago,

Helmco, Inc., Chicago, Ill. High Point Paper Box Co., Inc., High Point,

Hinde & Dauch Paper Co., The, Sandusky, Ohio

Howell, F. M. & Co., Elmira, N. Y. Interstate Folding Box Co., The, Middletown, Ohio

Interstate Litho. Corp., Bklyn, N. Y. Kaumagraph Co., New York, N. Y. Kay Displays, Inc., New York, N. Y. Kayton, Robert Displays, Inc., New York,

Keystone Box Co., Pittsburgh, Pa.

Kindred, MacLean & Co. Inc., Long Island City, N. Y.

Magill-Weinsheimer Co., Chicago, Ill.

Manders Co., Inc., The, New York, N. Y.

McCandlish Lithograph Corp., Phila., Pa.

Merit Display Card Co., New York, N. Y.

Milprint, Inc., Milwaukee, Wis. Myers, J. & P. B. Inc., Jersey City, N. J. Nalco Inc., New York, N. Y.

National Folding Box Co., New Haven, Conn

National Printing & Engraving Co., Chicago, Ill.

National Process Co., Inc., The, New York,

Nevins-Church Press, The, New York, N. Y. Niagara Lithograph Co., Buffalo, N. Y Nicoll & Co., San Francisco, Calif.

Oberly & Newell Lithograph Corp., New York, N. Y.

Ohio Boxboard Co., The, Rittman, Ohio Old Dominion Box Co., Inc., Charlotte,

Ottawa River Paper Co., The, Toledo, Ohio Phenix Associates, New York, N. Y. Pictorial Paper Package Corp., Aurora, Ill. Pilliod Cabinet Co., The, Swanton, Ohio Progress Lithographing Co., The, Cincinnati, Ohio.

Randolph Paper Box Co., Richmond, Va. Reyburn Mfg. Co., Inc., The, Phila., Pa. Reynolds Metals Co., Richmond, Va.

Robertson Paper Box Co. Inc., Montville, Conn.

Rode & Brand, New York, N. Y. Sample-Durick Co., Inc., Indian Orchard, Mass.

Scandore Paper Box Co. Inc., Bklyn, N. Y. Schmidt Lithograph Co., San Francisco, Calif.

Schoettle, Edwin J. Co., Phila., Pa. Schutz, Thom. A. Co., Chicago, Ill.

Stecher-Traung Lithograph Corp., Rochester, N. Y.

Stensgaard, W. L. & Associates, Chicago,

Strobridge Lithographing Co., The, Cincinnati, Ohio

Superior Folding Box Co., St. Louis, Mo. Transparent Specialties Corp., Cleveland, Ohio

Onto
Union Steel Products Co., Albion, Mich.
United States Printing & Lithograph Co.,
The, Cincinnati, Ohio
Walco Plastics, E. Orange, N. J.
Waldorf Paper Products Co., St. Paul,

Minn.

Warner Brothers Co., The, Bridgeport, Young, Everett Co., Providence, R. I. Zipprodt, Inc., Chicago, Ill. Zumbiel, C. W. Co., The, Cincinnati, Ohio

COUNTER (Of Glass and Wood)

Arrow Mfg. Co., Inc., Hoboken, N. J. Badger Merchandising Displays, Inc., Mil-

Badger Merchandising Displays, Inc., Mil-waukee, Wis.

Bronzart Metals Co., New York, N. Y.
Chaspec Mfg. Co., New York, N. Y.
DeNina, James Andrew, New York, N. Y.
Diamond Press Inc., The, Display-Rite
Div., New York, N. Y.
Displayers, The, New York, N. Y.
Gutterson & Co., Inc., New York, N. Y.
Harlich Mfg. Co., Mastercraft Div., Chicago, Ill.

cago, Ill.

Kay Displays, Inc., New York, N. Y.
Kayton, Robert Displays, Inc., New York, New York, Nicoll & Co., San Francisco, Calif.

Pilliod Cabinet Co., The, Swanton, Ohio Ressinger, Paul, Chicago, Ill. Schunack, C. E., Inc., Meriden, Conn. Schutz, Thom. A. Co., Chicago, Ill. Stensgaard, W. L. & Assocs., Chicago, Ill.

FLOOR STAND (Corrugated & Solid Fibre)

American Box Board Co., Grand Rapids, Mich.

Badger Merchandising Displays, Inc., Milwaukee, Wis.

Container Corp. of America, Chicago, Ill.

Continental Container Corp., Bklyn, N. Y.

Diamond Press Inc., The Display-Rite Div. New York, N. Y.

Display Finishing Co., Inc., Long Island City, N. Y. Edwards & I Chicago, Ill. Deutsch Lithographing Co.,

Excelsior Paper Specialties Co., New York, N. Y. Federal Carton Corp., New York, N. Y. Fibreboard Prods., Inc., San Francisco,

Gair, Robert Co., Inc., New York, N. Y. Gaylord Container Corp., St. Louis, Mo. Grand-City Container Corp., New York,

Hankins Container Co., Cleveland, Ohio Helmco, Inc., Chicago, Ill. Hinde & Dauch Paper Co., The, Sandusky,

Inland Container Corp., Indianapolis, Ind. Kay Displays, Inc., New York, N. Y. Kayton, Robert Displays, Inc., New York, N. Y.

Keystone Box Co., Pittsburgh, Pa. Kress, F. J. Box Co., Pittsburgh, Pa Magill-Weinsheimer Co., Chicago, I Magill-Weinsheimer Co., Chicago, Ill. Milprint, Inc., Milwaukee, Wis. National Container Corp., Long Island City,

N. V. Niagara Lithograph Co., Buffalo, N. Y. Oberly & Newell Lithograph Corp., New York, N. Y.

Ohio Boxboard Co., The Rittman, Ohio Old Dominion Box Co., Inc., Charlott, N. C.

N. C. Ottawa River Paper Co., The, Toledo, Ohio Reyburn Mfg. Co., Inc., The, Phila., Pa. Schmidt Lithograph Co., San Francisco, Calif.

Schutz, Thom. A. Co., Chicago, Ill.

Sherman Paper Products Corp., Newton Upper Falls, Mass. Stensgaard, W. L. & Associates, Chicago, TII

Waldorf Paper Products Co., St. Paul, Minn.

LITHOGRAPHS

See Lithographers

METAL, SHEET

Advertising Metal Display Co., Chicago, T11 American Can Co., New York, N. Bronzart Metals Co., New York, N. Y. Farrington Mfg. Co., Boston, Mass. Grammes, L. F. & Sons, Inc., Allentown, Pa. Heekin Can Co., Cincinnati, Ohio Helmco, Inc., Chicago, Ill. Kay Displays, Inc., New York, N. Y. Kayton, Robert Displays, Inc., New York, N. Y.

WIRE

Colwell, Lawrence J., New York, N. Y. Gray Wire Specialty Co., The, Cleveland, Ohio Union Steel Products Co., Albion, Mich. Washburn Co., The Worcester, Mass.

DROPPERS, BOTTLE

Anchor Hocking Glass Corp., Lancaster, Armstrong Cork Co., Lancaster, Pa. Cournand, E. L. Inc., New York, N. Y. Double Duty Products, Inc., Cleveland, Ohio Class Industries, Inc., New York, N. Y. Kimble Glass Co., Vineland, N. J. Owens-Illinois Glass Co., Toledo, Ohio Owens-Illinois Pacific Coast Co., San Francisco, Calif. Pennsylvania Glass Products Co., Pittsburgh, Pa. Price, M. B. Associates, New York, N. Y.

DRUMS

FIBRE

Canister Co., The, Phillipsburg, N. J. Carpenter Container Corp., Bklyn, N. Y. Cleveland Container Co., The, Cleveland, Ohio Consolidated Paper Co., Monroe, Mich. Container Co., The, Van Wert, Ohio Container Corp. of America, Chicago, Ill. Fibreboard Prods., Inc., San Francisco, Calif. Gardner-Richardson Co., The, Middletown, ates Paper Co. Ltd., The, Los Angeles, Calif. Gaylord Container Corp., St. Louis, Mo. Master Package Corp., The, Owen, Wis.

METAL

Aluminum Co. of America, Pittsburgh, Pa. Aluminum Co. of America, Pittsburgh, American Can Co., New York, N. Y. Continental Can Co., New York, N. Y. Crown Can Co., Phila., Pa. Ellis, George D. & Sons, Inc., Phila., Pa. Heekin Can Co., Cincinnati, Ohio Owens-Illinois Can Co., Toledo, Ohio Republic Steel Corp., Cleveland, Ohio Wheeling Corrugating Co., Wheeling, W. Va. Wilson & Bennett Mfg. Co., The, Chicago,

EMBOSSING ROLLS, PAPER

Bingham Bros. Co., New York, N. Y. Marconetti, A. E., Inc., New York, N. Y. Waldron, John Corp., New Brunswick, N. J.

ENVELOPES

CLOTH & COTTON-LINED PAPER

American Paper Goods Co., The, Kensing-American Paper Goods Co., Ine, Kensington, Conn.
Andrews, P. L. Corp., Bklyn, N. Y.
Cottonluxe Mfg. Co., New York, N. Y.
Tension Envelope Corp., New York, N. Y.
United Mfg. Co., Springfield, Mass.
U. S. Envelope Co., Springfield, Mass.
Varey-Shea Bag Corp., Elizabeth, N. J.

TRANSPARENT

American Paper Goods Co., The, Kensington, Conn.

Andrews, P. L. Corp., Bklyn, N. Y.

Berkowitz Envelope Co., Kansas City, Mo.

Clark, Geo. V. Co., Inc., Long Island City,
N. Y.

Comet Envelope & Paper Co. Inc., New York, N. Y. Continental Bag Spec. Corp., New York, Continental Bag Spec. Corp., New York, N. Y.
Crystal Transparent Mfg. Co. Inc., New York, N. Y.
Cupples-Hesse Corp., St. Louis, Mo. Dennison Mfg. Co., Framingham, Mass. Dobeckmun Co., The, Cleveland, Ohio Humitube Mfg. Co., Peoria, Ill.
Mason Envelope Co., New York, N. Y.
Milprint Inc., Milwaukee, Wis.
Munson Bag Co., The, Cleveland, Ohio Neostyle, Inc., Chicago, Ill.
Oneida Paper Prod., Inc., New York, N. Y.
Print-A-Tube Co., Passaic, N. J.
Printloid, Inc., New York, N. Y.
Royal, Thomas M. & Co., Phila., Pa.
Seaman Box Co., New York, N. Y.
Shellmar Products Co., Mt. Vernon, Ohio Tension Envelope Corp., New York, N. Y.
Tower Envelope Corp., New York, N. Y.
Trans-Pac Services, Inc., New York, N. Y.
U. S. Envelope Co., Springfield, Mass.

EXCELSIOR, PAPER

See also Transparent Materials, Shredded

Ben Mont Papers, Inc., Bennington, Vt. Crystal Tissue Co., The, Middletown, Ohio Excelsior Paper Specialties Co., New York,

Inland Container Corp., Indianapolis, Ind. Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich. Sweetnam, Geo. H. Inc., Cambridge, Mass.

FINISHERS

CUSTOM

See Paper Varnishes) Finishers (Lacquers &

DISPLAY

See Display Mounting & Finishing

FLOCKING

Cambridge Paper Box Co., Cambridge, Cellusuede Products, Inc., Rockford, Ill. Chaspec Mfg. Co., New York, N. Y. Eppy, Samuel Inc., New York, N. Y.

FOIL, METAL

Aluminum Co. of America, Pittsburgh, Pa. Bradner Smith & Co., Chicago, Ill. Dejonge, Louis & Co., New York, N. Y. Hampden Glazed Paper & Card Co., Holyoke, Mass.

Hazen Paper Co., Holyoke, Mass.

Iohnston Tin Foil & Metal Co., The, St. Keller-Dorian Paper Co., New York, N. Y. Marvellum Co., The, Holyoke, Mass. McLaurin-Jones Co., Brookfield, Mass.

Pauli, Karl Corp., New York, N. Y. Reynolds Metals Co., Richmond, Va. Williams, Chas. W. & Co., Inc., New York,

GLASS, ROD & TUBING

Corning Glass Works, Corning, N. Y. Glass Industries, Inc., New York, N. Y. Kimble Glass Co., Vineland, N. J. Owens-Illinois Pacific Coast Co., San Francisco, Calif. Pennsylvania Glass Products Co., Pittsburgh, Pa.

GLUES & PASTES

See Adhesives

GOLD LEAF

See Roll Leaf

HAMMERS & TACKERS, AUTOMATIC FEED

Acme Staple Co., Camden, N. J. Bostitch, Inc., E. Greenwich, R. I. Heller Co., The, Cleveland, Ohio Paslode Co., Chicago, Ill.

INKS

GRAVURE

American Printing Ink Co., Div. General American Printing Ink Co., Div. General Printing Ink Corp., Chicago, Ill. Huber, J. M. Inc., New York, N. Y. In-Tag Division of Interchemical Corp., New York, N. Y. Levey, Fred'k H. Co., Inc., New York, N. Y. Rotogravure Div., General Printing Ink Corp., New York, N. Y. Sinclair & Valentine Co., New York, N. Y.

LETTERPRESS & LITHOGRAPHIC

Acme Printing Ink Co., Chicago, Ill.
American Printing Ink Co., Div. General
Printing Ink Corp., Chicago, Ill.
Auld, Hampton Inc., Newark, N. J
Barta-Griffin Co., Worcester, Mass.
Bensing Bros. & Deeney, Phila., Pa.
Braden-Sutphin Ink Co., Cleveland, Ohio
California Ink Co., San Francisco, Calif.
Capitol Printing Ink Co., Inc., Washington,
D. C. D. C.
Carlson, John P. Inc., Bklyn, N. Y.
Chemical Color & Supply Co., Div. General Printing Ink Corp., Chicago, Ill.
Crescent Ink & Color Co., Phila., Pa.
Driscoll, Martin & Co., Chicago, Ill.
Eagle Printing Ink Co., Div. General Printing Ink Corp., New York, N. Y.
Flint, Howard Ink Co., Div. General Printing Ink Corp., New York, Mch.
Fuchs & Lang Mfg. Co., Div. General
Printing Ink Corp., New York, N. Y.
Gaetjens, Berger & Wirth, Bklyn, N. Y.
General Printing Ink Corp., New York,
N. Y. Grady & Neary Co., Chicago, Ill.

Hellmuth, Charles Printing Ink Corp., New York, N. Y. Hill-Hentschel Co., St. Louis, Mo. Hilton-Davis Co., Cincinnati, Ohio Huber, J. M. Inc., New York, N. Y International Printing Ink Corp., New York,

Johnson, Chas. Eneu & Co., Phila., Pa. Kelly, E. J. Co., Kalamazoo, Mich. Kohn & Madden Printing Ink Co., Chicago,

Levey, Fred'k H. Co., New York, N. Y. Manufacturers Printing Ink Corp., Bklyn, N. V

Morrill, Geo. H. Co., Div. General Printing Ink Corp., New York, N. Y. Pacific Printing Ink Co., San Francisco, Calif. Pope & Gray Inc., New York, N. Y.

Roberts, Lewis Inc., Newark, N. J.
Roosen, H. D. Co., Bklyn, N. Y.
Schwarm & Jacobus Co., Cincinnati, Ohio
Siebold, J. H. & G. B., Inc., New York,
N. Y.
Sinclair & Carroll Co., New York, N. Y.
Sinclair & Valentine Co., New York, N. Y.
Sleight Metallic Ink Co., Phila., Pa.
Sleight Metallic Ink Co., of Ill., Chicago, Ill.
Superior Printing Ink Co., New York, N. Y.
Triangle Ink & Color Co., Bklyn, N. Y.
Ullman, Sigmund Co., Div. General Printing Ink Corp., New York, N. Y.
Wilson, W. D. Printing Ink Co., Long Island
City, N. Y.

JARS

GLASS

Anchor Hocking Glass Corp., Lancaster, Ohio Armstrong Cork Co., Lancaster, Pa. Armstrong Cork Co., Lancaster, Pa.
Ball Brothers Co., Muncie Ind.
Brockway Glass Co., Brockway, Pa.
Carr-Lowry Glass Co., Baltimore, Md.
Glass Containers Inc., Los Angeles, Calif.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Kimble Glass Co., Vineland, N. J.
Owens-Illinois Glass Co., Toledo, Ohio
Owens-Illinois Pacific Coast Co., San Francisco Calif. cisco, Calif. Pennsylvania Glass Products Co., Pittsburgh, Pa. Super-Seal Container Corp., Washington Swindell Brothers, Baltimore, Md. Wheaton, T. C. Co., Millville, N. J.

OPAL

Anchor Hocking Glass Corp., Lancaster, Ohto
Carr-Lowry Glass Co., Baltimore, Md.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Kimble Glass Co., Vineland, N. J.
Wheaton, T. C. Co., Millville, N. J.

LABELS

FOIL American Colortype Co., Chicago, Ill. Andersen, A. J., Chicago, Ill. Attleboro Printing & Embossing Co., Inc., Attleboro, Mass. Attleboro, Mass.
Bartlett Label Co., Kalamazoo, Mich.
Cameo Die & Label Co., New York, N. Y.
Craftsman Label Co., New York, N. Y.
Dennison Mfg. Co., Framingham, Mass.
Ever Ready Label Corp., New York, N. Y.
Fleming-Potter Co. Inc., Peoria, Ill.
Foxon Co., The, Providence, R. I.
Grammes, L. F. & Sons, Inc., Allentown, Grand Rapids Label Co., Grand Rapids, Mich. Johnston Tin Foil & Metal Co., The, St. Johnston The Foll & Metal Co., The, St.
Louis, Mo.
Kaumagraph Co., New York, N. Y.
Krause, Richard M. Inc., New York, N. Y.
Lambooy Label & Wrapper Co., Kalamazoo, Milwaukee Label & Seal Co., Milwaukee,

Wis.
Nevins-Church Press, The, New York, N. Y.
Pacific Label Co., Los Angeles, Calif.
Reyburn Mfg. Co., Inc., The, Phila., Pa.
Reynolds Metals Co., Richmond, Va.
Robinson Tag & Label Co., New York, N. Y.
St. Louis Sticker Co., St. Louis, Mo.
Tablet & Ticket Co., The, Chicago, Ill.
Tompkins' Label Service, Phila., Pa. Unique Printed Products Co. Inc., Terre Haute, Ind. Warner Brothers Co., The, Bridgeport,

Conn. Wynekoop, Walker Co., Chicago, Ill.

PRINTED & LITHOGRAPHED

Addison Lithographing Co., Rochester, N. Y. American Colortype Co., Chicago, Ill. Andersen, A. J., Chicago, Ill. Bartlett Label Co., Kalamazoo, Mich. Brooks Bank Note Co., Springfield, Mass. Burt, F. N. Co., Inc., Buffalo, N. Y. Calvert Lithographing Co., Detroit, Mich. Cameo Die & Label Co., New York, N. Y. Central Lithograph Co., The, Cleveland, Ohio

Chaspec Mfg. Co., New York, N. Y. Consolidated Lithographing Corp., Bklyn., N. Y.

Craftsman Label Co., New York, N. Y. Crocker Union, San Francisco, Calif. Dennison Mfg. Co., Framingham, Mass. Economy Novelty & Printing Co., New York, N. Y.

Edwards & Deutsch Lithographing Co., Chicago, Ill.

Eureka Specialty Printing Co., Scranton,

Ever Ready Label Corp., New York, N. Y. Fairchild, E. E. Corp., Rochester, N. Y. Fibreboard Prods., Inc., San Francisco. Calif.

Fitzhugh, Wm. W. Inc., Bklyn, N. Y. Fleming-Potter Co., Inc., Peoria, Ill. Forbes Lithograph Co., The, Boston, Mass. Gamse Lithographing Co., Inc., Baltimore, Md.

Grand Rapids Label Co., Grand Rapids, Mich.

Howell, F. M. & Co., Elmira, N. Y. Interstate Litho. Corp., Bklyn, N. Y. Kaumagraph Co., New York, N. Y. Kindred, MacLean & Co., Inc., Long Island City, N. Y.

Krause, Richard M. Inc., New York, N. Y. Lambooy Label & Wrapper Co., Kalama-zoo, Mich.

Lehman Printing and Litho. Co., San Francisco, Calif.

Magill-Weinsheimer Co., Chicago, Ill. Michigan Litho. Co., Grand Rapids, Mich. Milwaukee Label & Seal Co., Milwaukee, Wis.

Muirson Label Co., Inc., Bklyn, N. Y. Nashua Package Sealing Co., Inc., Nashua, NH

National Color Printing Co., Inc., Baltimore, Md.

National Process Co., New York, N. Y. Nevins-Church Press, New York, N. Y. Pictorial Paper Package Corp., Aurora, Ill. Progress Lithographing Co., Cincinnati,

Rexford Paper Co., Milwaukee, Wis. Reyburn Mfg. Co., Inc., Phila., Pa.
Robinson Tag & Label Co., New York, N. Y.
Rode & Brand, New York, N. Y.
Rossotti Lithographing Co., N. Bergen, N. J.

St. Louis Sticker Co., St. Louis, Mo. Schmidt Lithograph Co., San Francisco, Calif.

Stecher-Traung Lithograph Corp., Rochester, N. Y.

Tompkins' Label Service, Phila., Pa

Trade Lithograph & Printing Co., Inc., New York, N. Y. Trautmann, Bailey & Blampey, New York,

Unique Printed Products Co., Inc., Terre

Haute, Ind. U. S. Printing & Lithograph Co., Cincinnati,

Ohio Waddill Printing & Lithographing Co., Danville, Va.

Waldorf Paper Products Co., St. Paul,

Warner Bros. Co., The, Bridgeport, Conn. Wilmanns Bros. Co., Milwaukee, Wis.

(For Shipping, Marking, etc.)

Attleboro Printing & Embossing Co., Inc., Attleboro, Mass.
Bartlett Label Co., Kalamazoo, Mich.
Economy Novelty & Printing Co., New
York, N. Y.
Grand Rapids Label Co., Grand Rapids,

Mich.

Ketcham, Howard Inc., New York, N. Y. Lambooy Label & Wrapper Co., Kalamazoo, Mich

Reyburn Mfg. Co., Inc., The, Phila., Pa. Unique Printed Products Co., Inc., Terre Haute, Ind.

SHIPPING

Bartlett Label Co., Kalamazoo, Mich. Dennison Mfg. Co., Framingham, Mass. Economy Novelty & Printing Co., New York, N. Y.

Ever Ready Label Corp., New York, N. Y. Fleming-Potter Co. Inc., Peoria, Ill. Grand Rapids Label Co., Grand Rapids,

Howell, F. M. & Co., Elmira, N. Y. Lambooy Label & Wrapper Co., Kalamazoo, Mich.

Nashua Package Sealing Co., Inc., Nashua, N. H.

N. H.
Pictorial Paper Package Corp., Aurora, Ill.
Rexford Paper Co., Milwaukee, Wis.
Reyburn Mfg. Co., Inc., The, Phila., Pa.
Robinson Tag & Label Co. New York,
N. Y.

N. Y.
St. Louis Sticker Co., St. Louis, Mo.
Tablet & Ticket Co., The, Chicago, Ill.
Tompkins' Label Service, Phila., Pa.
Unique Printed Products Co. Inc., Terre Haute, Ind.

STOCK, LITHOGRAPHED

(Vinyette, Etc.)

Bartlett Label Co., Kalamazoo, Mich. Consolidated Litho. Corp., Bklyn, N. Y. Crocker Union, San Francisco, Calif. Kaumagraph Co., New York, N. Y.

Lambooy Label & Wrapper Co., Kalama-zoo, Mich.

Lehman Printing & Litho. Co., San Fran-cisco, Calif. Muirson Label Co., Inc., Bklyn, N. Y. Reyburn Mfg. Co., Inc., Phila., Pa. Rossotti Lithographing Co., N. Bergen,

Schmidt Lithograph Co., San Francisco,

Calif. Stecher-Traung Lithograph Corp., Rochester, N. Y.

Strobridge Lithographing Co., The, Cincinnati, Ohio
Tompkins' Label Service, Phila., Pa. Unique Printed Products Co., Inc., Terre

Haute, Ind. U. S. Printing & Lithograph Co., Cincinnati, Ohio

Waddill Printing & Lithographing Co., Danville, Va.

TRANSPARENT

Bender, H. P., New York, N. Y. Cellulose Packaging Corp., New York, N. Y. Crystal Transparent Mfg. Co., Inc., New York, N. Y. York, N. Y.

Dennison Mfg. Co., Framingham, Mass.
Dobeckmun Co., The, Cleveland, Ohio
Ever Ready Label Corp., New York, N. Y.
Foxon Co., The, Providence, R. I.
General Laminating Inc., New York, N. Y.
Milprint, Inc., Milwaukee, Wis.
Neostyle, Inc., Chicago, Ill.
Palm, Fechteler & Co., New York, N. Y.
Paramount Paper Prods. Co., Inc., Phila., Pa.
Robinson Tag & Label Co., New York, N. Y.
St. Louis Sticker Co., St. Louis, Mo. St. Louis Sticker Co., St. Louis, Mo.

Shellmar Products Co., Mt. Vernon, Ohio Tablet & Ticket Co., The, Chicago, Ill. Tompkins' Label Service, Phila., Pa. Unique Printed Products Co. Inc., Terre Haute Ind

LABORATORIES, RESEARCH & TESTING, INDEPENDENT

Analytical Laboratory, The, Jersey City

N. J. Bowser-Morner Testing Laboratories, Dayton, Ohio California Testing Laboratories, Los Ange-

les. Calif. Columbus Laboratories, The, Chicago, Ill.

Container Testing Laboratories, Inc., New York, N. Y.

Dumas Laboratory, The, Atlanta, Ga. Detroit Testing Laboratory, The, Detroit, Mich

Ekroth Laboratories, Inc., New York, N. Y. Finck, J. L. Laboratories, The, Washington, D. C.

D. C.
Finishing Research Laboratories, Inc., Chicago, Ill.
Laucks Laboratories, Inc., Seattle, Wash.
LaWall and Harrisson, Phila., Pa.
Little, Arthur D., Inc., Cambridge, Mass.
Los Angeles Testing Laboratory, Los Angeles, Calif.
Maffitt, Howard C., Des Moines, Ia.
Matson, Rogers, and Markham, Seattle, Wash.
National Canners' Laboratory, Pittsburgh.

National Canners' Laboratory, Pittsburgh, Pa. New York Testing Laboratories, New York

N. Northwest Testing Laboratories, Seattle,

Wash. Osborne, Raymond G. Laboratories, Los Angeles, Calif. Pacific Coast Testing Laboratory, Seattle,

Wash Pitkin, Lucius Inc., New York, N. Y Pittsburgh Testing Laboratory, Pittsburgh,

Pa. Quinn, Don L. Co., The, Chicago, Ill. Smith-Emery Co., Los Angeles, Calif. Smith-Emory & Co., San Francisco, Calif. Twining Laboratories, The, Fresno, Calif.

LACQUERS & VARNISHES

See Coatings, Protective

LAMINATING, CUSTOM

Arvey Corp., Chicago, Ill.

Butterfield-Barry Co., Inc., New York, N. Y.

Dobeckmun Co., The, Cleveland, Ohio
General Laminating, Inc., New York, N. Y.

Holes & McClellan, Bedford, Ohio
Jaypaco Co., New York, N. Y.

Laminating Corp., Chicago, Ill.
Laminoid, Inc., N. Bergen, Inc.
Menasha Products Co., The, Menasha, Wis.

Mor-Gan Laminating & Foliating Co., New
York, N. Y. Mor-Gan Laminating & Poliating Co., New York, N. Y.
New York Laminating Co., Irvington, N. J.
Plastics Finishing Corp., Bklyn, N. Y.
Salwen, Joe Paper Co., New York, N. Y.
Shellmar Products Co., Mt. Vernon, Ohio Shoup-Owens, Inc., Hoboken, N. J.
U. S. Finishing & Mfg. Co., Chicago, Ill.
Walser Mfg. Co., The, Clifton, N. J.
Westfield River Paper Co., Inc., Russell,

LEATHERETTE

See also Paper, Imitation Leather

Atlas Powder Co., Zapon-Keratol Div., Stamford, Conn. Columbus Coated Fabrics Corp., Columbus, Dejonge, Louis & Co., New York, N. Y.

du Pont de Nemours, E. I. & Co., Inc., du Pont de Nemours, E. I. & Co., Inc.
Wilmington, Del.
Griffin, Campbell, Hayes, Walsh, Inc.
New York, N. Y.
Holliston Mills, Inc., The, Norwood, Mass. Hayes, Walsh, Inc., Pyrotex Leather Co., Leominster, Mass.

Textileather Corp., Toledo, Ohio
U. S. Rubber Co., New York, N. Y.

Williams, Chas W. & Co., Inc., New York,

LINERS

BOX. BARREL AND BAG

Angier Corp., Framingham, Mass Angler Corp., Frammgann, Mass.
Bemis Bro. Bag Co., St. Louis, Mo.
Betner, Benj. C. Co., Devon, Pa.
Fibreboard Prods., Inc., San Francisco, Calif.
Fitchburg Paper Co., Fitchburg, Mass.
Gardner-Richardson Co., The, Middletown, Ohio Inland Container Corp., Indianapolis, Ind. Kalamazoo Vegetable Parchment Co., Kala-

mazoo, Mich. LaBoiteaux Co., Inc., The, Cincinnati, Ohio Matthias Paper Corp., Phila., Pa. Menasha Products Co., The, Menasha, Wis. Rexford Paper Co., Milwaukee, Wis.
Riegel Paper Corp., New York, N. Y.
St. Regis Paper Co., New York, N. Y.
Schmidt Lithograph Co., San Francisco,

Shellmar Products Co., Mt. Vernon, Ohio Sherman Paper Products Corp., Newton Upper Falls, Mass. Sweetnam, Geo. H., Inc., Cambridge, Mass.

CLOSURE

See Closure Liners

LITHOGRAPHERS

Addison Lithographing Co., Rochester, N.Y. Brooks Bank Note Co., Springfield, Mass. Burt, F. N. Co., Inc., Buffalo, N. Y. Calvert Lithographing Co., Detroit, Mich. Central Lithograph Co., The, Cleveland, Ohio Consolidated Lithographing Corp., Bklyn, Continental Lithograph Corp., Cleveland, Crocker Union, San Francisco, Calif Edwards & Deutsch Lithographing Co., Chicago, Ill. Einson-Freeman Co., Inc., Long Island City, N. Y.
Eureka Specialty Printing Co., Scranton, Fa.
Fairchild, E. E. Corp., Rochester, N. Y.
Fitzhugh, Wm. W., Inc., Bklyn, N. Y.
Fleming-Potter Co., Inc., Peoria, Ill.
Forbes Lithograph Co., The, Boston, Mass.
Gamse Lithographing Co., Inc., Baltimore, Md. Howell, F. M. & Co., Grand Rapids, Mich. Interstate Litho. Corp., Bklyn, N. Kaumagraph Co., New York, N. Y

Kaumagraph Co., New York, N. Y.
Kindred, MacLean & Co., Inc., Long Island
City, N. Y.
Lehman Printing & Litho. Co., San Francisco, Calif.
Magill-Weinsheimer Co., Chicago, Ill.
McCandish Lithograph Corp., Phila., Pa.
Michigan Litho. Co., Grand Rapids, Mich.
Milprint, Inc., Milwaukee, Wis.
National Color Printing Co., Inc., Baltimore,
Md. Md.

National Printing & Engraving Co., Chi-

cago, Ill.

Naigara Lithograph Co., Buffalo, N. Y.

Niagara Lithograph Co., Buffalo, N. Y.

Oberly & Newell Lithograph Corp., New
York, N. Y.

Office Company Coffset Gravure Corp., Long Island City, N. Y.

Pictorial Paper Package Corp., Aurora, Ill. Progress Litho. Co., Cincinnati, Ohio Rode & Brand, New York, N. Y.

Rossotti Lithographing Co., N. Bergen, N. J. Schmidt Lithograph Co., San Francisco, Calif

Stecher-Traung Lithograph Corp., Rochester, N. Y.
Strobridge Lithographing Co., The, Cincinnati, Ohio

Trade Lithograph & Printing Co., Inc., New York, N. Y. Trautmann, Bailey & Blampey, New York,

U. S. Printing & Lithograph Co., Cincinnati, Ohio Waddill Printing & Lithographing Co., Danville, Va.
Wilmanns Bros. Co., Milwaukee, Wis.

MACHINES

AMPOULE WASHER

Lakso Company, Fitchburg, Mass.

BAG & ENVELOPE (Filling)

Amsco Packaging Machinery, Inc., Long Island City, N. Y. Arenco Machine Co., Inc., New York, N. Y. Automatic Scale Co., Inc., New York, N. Y. Bagpak, Inc., New York, N. Y. Bagpak, Inc., New York, N. Y.
Brown Bag Filling Machine Co., The, Fitchburg, Mass.
Consolidated Packaging Machinery Corp.,
Buffalo, N. Y. Exact Weight Scale Co., The, Columbus, Ohio
Ferguson, J. L. Co., Joliet, Ill.
Food Packaging Div. of Milprint, Inc.,
Milwaukee, Wis.
Goat, Fred Co., Inc., The, Bklyn, N. Y.
Gump, B. F. Co., Chicago, Ill.
International Paper Products Div. of International Paper Co., New York, N. Y.
Ivers-Lee Co., Newark, N. J.
Miller Wrapping & Sealing Machine Co.,
Chicago, Ill. Chicago, Ill.
Pneumatic Scale Corp., Ltd., North Quincy, Mass. Mass.
Redington, F. B. Co., Chicago, Ill.
St. Regis Paper Co., New York, N. Y.
Stokes & Smith Co., Phila., Pa.
Triangle Package Machinery Co., Chicago,

U. S. Automatic Box Machinery Co., Inc., Boston, Mass. Weigh Right Automatic Scale Co., Joliet, Wright's Automatic Tobacco Packing Ma-chine Co., Durham, N. C.

BAG & ENVELOPE (Making)

Amsco Packaging Machinery, Inc., Long Island City, N. Y.
Hayssen Mfg. Co., Sheboygan, Wis.
Heinrich, H. H., Inc., New York, N. Y.
Hudson-Sharp Machine Co., Green Bay,
Wis. Ivers-Lee Co., Newark, N. J.
Modern Containers, Inc., Los Angeles, Calif. Package Machinery Co., Springfield, Mass. Peters Machinery Co., Chicago, Ill. Pneumatic Scale Corp., Ltd., North Quincy, Mass. Potdevin Machine Co., Bklyn, N. Y.
Richard Machine Co., Battle Creek, Mich.
Smith & Winchester Mfg. Co., S. Windham, Ohio Smithe, F. L. Machine Co., Inc., New York, N. Y. Stokes & Smith Co., Philadelphia, Pa.
Triangle Package Machinery Co., Chicago, Waldron, John Corp., New Brunswick, N. J. Weber, H. G. & Co., Inc., Kiel, Wis. Wrap-Ade Machine Co. Inc., Newark, N. J.

Wright's Automatic Tobacco Packing Machine Co., Durham, N. C.

BAG & ENVELOPE (Sealing)

Acme Staple Co., Camden, N. I. Acme Staple Co., Camden, N. J.
Amsco Packaging Machinery, Inc., Long
Island City, N. Y.
Arenco Machine Co., Inc., New York, N. Y.
Bagpak, Inc., New York, N. Y.
Bemis Bro. Bag Co., St. Louis, Mo.
Betner, Benj. C. Co., Devon, Pa.
Bostitch, Inc., East Greenwich, R. I.
Cleveland Crimping Press Co., Cleveland,
Obio Ohio Consolidated Packaging Machinery Corp.,

Consolidated Packaging Machinery Corp., Buffalo, N. Y.
Container Equipment Corp., Newark, N. J.
Food Packaging Div. of Milprint Corp., Milwaukee, Wis.
Goat, Fred Co. Inc., The, Bklyn, N. Y.
Gump, B. F. Co., Chicago, Ill.
International Paper Products Div. of International Paper Co., New York, N. Y.
Ivers-Lee Co., Newark, N. J.
Miller Wrapping & Sealing Machine Co., Chicago, Ill. Chicago, Ill.

Modern Containers, Inc., Los Angeles, Calif. Pneumatic Scale Corp., Ltd., North Quincy, Mass.

Mass.
Potdevin Machine Co., Bklyn, N. Y.
Richard Machine Co., Battle Creek, Mich.
Redington, F. B. Co., Chicago, Ill.
St. Regis Paper Co., New York, N. Y.
Saranac Mach. Co., Benton Harbor, Mich.
Stokes & Smith Co., Phila., Pa.
Triangle Package Machy., Co., Chicago, Ill.
U. S. Automatic Box Machinery Co., Inc.,
Roston Mass.

Boston, Mass.
Wrap-Ade Machine Co., Inc., Newark, N. J.
Wright's Automatic Tobacco Packing Machine Co., Durham, N. C.

BAG SEWING

Bagpak, Inc., New York, N. Y.
Consolidated Packaging Machinery Corp.,
Buffalo, N. Y.
International Paper Products Div. of International Paper Co., New York, N. Y.
Potdevin Machine Co., Bklyn, N. Y.
St. Regis Paper Co., New York, N. Y.

BAG STAPLING

Acme Staple Co., Camden, N. J.
Acme Steel Co., Chicago, Ill.
Bates Mfg. Co., The, New York, N. Y.
Bostitch, Inc., East Greenwich, R. I.
Dexter Folder Co., New York, N. Y.
Globe Mfg. Co., Phila., Pa.
Harris-Seybold-Potter Co., Dayton, Ohio
Heller Co., The, Cleveland, Ohio
Paslode Co., Chicago, Ill.
Saranac Machine Co., Benton Harbor,
Mich. Mich.

BANDING & WIRE STRAPPING

Acme Steel Co., Chicago, Ill.
Gerrard Co., Inc., The, Chicago, Ill.
Knowlton, M. D. Co., Rochester, N. Y.
Scandia Mfg. Co., North Arlington, N. J.
Stanley Works, The, New Britain, Conn.

BOTTLE CLEANING (Air)

Kiefer, Karl Machine Co., The, Cincinnati, Ohio Pneumatic Scale Corp., Ltd., North Quincy, U. S. Bottlers Machinery Co., Chicago, Ill.

BOTTLE CLEANING (Washing)

Kiefer, Karl Machine Co., The, Cincinnatti Ohio Liquid Carbonic Corp., The, Chicago, Ill. U. S. Bottlers Machinery Co., Chicago, Ill.

BOX COLLAPSING

U. S. Automatic Box Machinery Co. Inc., See Machines, Filling, Dry Boston, Mass.

BOX MAKING (Folding)

Ferguson, J. L. Co., Joliet, Ill. International Paper Box Machine Co., Nashua, N. H. Nashua, N. H. Knowlton, M. D. Co., Rochester, N. Y. Staude, E. G. Mfg. Co., St. Paul, Minn. U. S. Automatic Box Machinery Co., Inc., Boston, Mass.

BOX MAKING (Set-Up)

Globe Mfg. Co., Phila., Pa.
Inman Mfg. Co., Inc., Amsterdam, N. Y.
National Metal Edge Box Co., Phila., Pa.
New Jersey Machine Corp., Hoboken, N. J.
Stokes & Smith Co., Phila., Pa.

BOX WINDOW APPLYING

International Paper Box Machine Co., Nashua, N. H. New Jersey Machine Corp., Hoboken, N. J. Smithe, F. L. Machine Co., Inc., New York, N. Y. Staude, E. G. Mfg. Co., St. Paul, Minn. Stokes & Smith Co., Phila., Pa.

BUNDLE TYING (String)

Bunn, B. H. Co., Chicago, Ill. Globe Mfg. Co., Phila., Pa. Potdevin Machine Co., Bklyn, N. Y.

BUNDLE TYING (Wire Strapping)

See Banding & Wire Strapping

BUNDLE WRAPPING

Amsco Packaging Machinery, Inc., Long Island City, N. Y. Hayssen Mfg. Co., Sheboygan, Wis. Hudson-Sharp Machine Co., Green Bay,

Wis.
Johnson Automatic Sealer Co., Ltd., Battle
Creek, Mich.
Miller Wrapping & Sealing Machine Co.,
Chicago, Ill.
Package Machinery Co., Springfield, Mass.
Potdevin Machine Co., Bklyn, N. Y.
Richard Machine Co., Battle Creek, Mich.

CAN CAPPING

Consolidated Packaging Machinery Corp., Buffalo, N. Y. Crown Cork & Seal Co., The, Baltimore,

Food Machinery Corp., Sprague-Sells Div., Hoopeston, Ill. Heekin Can Co., Cincinnati, Ohio Kiefer, Karl Machine Co., The, Cincinnati,

Liquid Carbonic Corp., The, Chicago, Ill. Pneumatic Scale Corp., Ltd., North Quincy, Mass.

U. S. Bottlers Machinery Co., Chicago, Ill. Williams Sealing Corp., Decatur, Ill.

CAN CLOSING & SEALING

American Can Co., New York, N. Y.

Ams, Max Machine Co., The, Bridgeport, Continental Can Co., New York, N. Y.
Crown Can Co., Phila., Pa.
Heekin Can Co., Cincinnati, Ohio
Kiefer, Karl Machine Co., The, Cincinnati, Ohio National Can Corp., New York, N. Y. Pneumatic Scale Corp., Ltd., North Quincy,

CAN FILLING, DRY

CAN FILLING. LIQUID

Alsop Engineering Corp., New York, N. Y. Crown Cork & Seal Co., The, Baltimore, Md. Ertel Engineering Corp., Kingston, N. Y. Food Machinery Corp., Sprague-Sells Div., Hoopeston, Ill.

Horix Manufacturing Co., Pittsburgh, Pa.
Kiefer, Karl Machine Co., The, Cincinnati,

Onio Liquid Carbonic Corp., The, Chicago, Ill. Scientific Filter Co., New York, N. Y. Stokes, F. J., Machine Co., Phila., Pa. U. S. Bottlers Machinery Co., Chicago, Ill. Vol-U-Meter Co., The, Buffalo, N. Y.

CAN LABELING

Alsop Engineering Corp., New York, N. Y. Burt Machine Co., Baltimore, Md. Burt Machine Co., Baltimore, Md.
Ferguson, J. L. Co., Joliet, III.
Food Machinery Corp., Sprague-Sells Div.,
Hoopeston, III.
Knowlton, M. D. Co., Rochester, N. Y.
Liquid Carbonic Corp., The, Chicago, III.
New Jersey Machine Corp., Hoboken, N. J.
Pneumatic Scale Corp., Ltd., North Quincy,
Mass.
Standard-Knoon Corp., Particulation Standard-Knapp Corp., Portland, Conn.

CAN WRAPPING

Ferguson, J. L. Co., Joliet, Ill. Miller Wrapping & Sealing Machine Co., Chicago, Ill. Package Machinery Co., Springfield, Mass. Redington, F. B. Co., Chicago, Ill. Standard-Knapp Corp., Portland, Conn.

CAP & COVER LINING

Ams, Max Machine Co., Bridgeport, Conn.
Dewey & Almy Chemical Co., Cambridge,
B., Mass.

CAPPING

Alsop Engineering Corp., New York, N. Y. Aluminum Co. of America, Pittsburgh, Pa. Aluminum Steel Co., New Kensington, Pa. Anchor Hocking Glass Corp., Lancaster, Ohio Ohio
Consolidated Packaging Machinery Corp.,
Buffalo, N. Y.
Crown Can Co., Phila., Pa.
Crown Cork & Seal Co., The, Baltimore, Md.
Goat, Fred Co., Inc., The, Bklyn, N. Y.
Heekin Can Co., Cincinnati, Ohio
Horix Manufacturing Co., Pittsburgh, Pa.
Kiefer, Karl Machine Co., The, Cincinnati,
Ohio Ohio Liquid Carbonic Corp., The, Chicago, Ill. Pneumatic Scale Corp., Ltd., North Quincy, Mass. Resina Automatic Machy. Co., Inc., Bklyn, N. Y. Scientific Filter Co., New York, N. Y. U. S. Bottlers Machinery Co., Chicago, Ill.

CAPSULE WRAPPING

Ivers-Lee Co., Newark, N. J. N. J. Machine Corp., Hoboken, N. J.

Williams Sealing Corp., Decatur, Ill.

CARTON FORMING, LINING, FILLING, FOLDING, CLOSING

Battle Creek Bread Wrapping Machine Co., Battle Creek Bread Wrapping Machine Co., Bostitch, Inc., East Greenwich, R. I. Container Equipment Corp., Newark, N. J. Ferguson, J. L. Co., Joliet, Ill. Interstate Folding Box Co., Middletown, Ohio National Folding Box Corp., New Haven, Conn. National Metal Edge Box Co., Phila., Pa. Peters Machinery Co., Chicago, Ill.

Pneumatic Scale Corp., Ltd., North Quincy, Mass. Redington, F. B. Co., Chicago, Ill. Stokes & Smith Co., Phila., Pa. Triangle Package Machinery Co., Chicago, U. S. Automatic Box Machinery Co., Inc. Boston, Mass.

CARTON LOADING

Burt Machine Co., Baltimore, Md.
Container Equipment Corp., Newark, N. J.
Ferguson, J. L. Co., Joliet, Ill.
Goat, Fred Co., Inc., The, Bklyn, N. Y.
Jeffrey Mfg. Co., The, Columbus, Ohio.
Redington, F. B., Co., Chicago, Ill.
Stokes & Smith Co., Phila., Pa. Automatic Box Machinery Co. Inc., Boston, Mass.

CASE LOADING

Container Equipment Corp., Newark, N. J. Crown Cork & Seal Co., Baltimore, Md. Ferguson, J. L. Co., Joliet, Ill. Standard-Knapp Corp., Portland, Conn.

CASE PRINTING

Ferguson, J. L. Co., Joliet, Ill. Hooper, F. X. Co., Inc., Glenarm, Md. Langston, Samuel M. Co., Camden, N. J. Swift, G. W., Jr., Inc., Bordentown, N. J.

CASE SEALING (Glue)

Container Equipment Corp., Newark, N. J. Ferguson, J. L. Co., Joliet, Ill. Kiefer, Karl, Machine Co., The, Cincinnati, Ohio Standard-Knapp Corp., Portland, Conn. Weigh Right Automatic Scale Co., Joliet,

CASE SEALING (Gummed Tape)

Arenco Machine Co., Inc., New York, N. Y. Container Equipment Corp., Newark, N. J. Gummed Tape & Devices Co., Bklyn, N. Y. McLaurin-Jones Co., Brookfield, Mass. Nashua Gummed & Coated Paper Co., Nashua, N. H. Nashua Package Sealing Co., Inc., Nashua, NH Seal, Inc., Shelton, Conn.

CASE SEALING (Staples and Wire)

Acme Staple Co., Camden, N. J.
Acme Steel Co., Chicago, Ill.
Bostitch, Inc., East Greenwich, R. I.
Dexter Folder Co., New York, N. Y. Harris-Seybold-Potter Co., Dayton, Ohio Heller Co., The, Cleveland, Ohio Ideal Stitcher & Mfg. Co., Racine, Wis. Saranac Machine Co., Benton Harbor, Mich.

CELLULOSE TUBE MAKING

Amsco Packaging Machinery, Inc., Long Island City, N. Y. Island City, N. Hudson-Sharp Machine Co., Green Bay, Knowlton, M. D. Co., Rochester, N. Y. Miller Wrapping & Sealing Machine Co. Chicago, Ill.
Potdevin Machine Co., Bklyn, N. Y.

CIRCULAR INSERTING

U. S. Automatic Box Machinery Co., Inc., Boston, Mass. Weigh Right Automatic Scale Co., Joliet,

COATING

(Lacquer and Varnish)

Haida Engineering Co., Long Island City,

Hudson-Sharp Machine Co., Green Bay,

Wis. Knowlton, M. D. Co., Rochester, N. Y. Marconetti, A. E. Inc., New York, N. Y. Potdevin Machine Co., Bklyn, N. Y. Rotogravure Engineering Corp., East Boston, Mass

Rutherford Machinery Co., Div. General Printing Ink Corp., New York, N. Y. Waldron, John Corp., New Brunswick, N. J.

COLLAPSIBLE TUBE (Filling & Sealing)

Arenco Machine Co., Inc., New York, N. Y. Colton, Arthur Co., Detroit, Mich. Kiefer, Karl Machine Co., Cincinnati, Ohio Stokes, F. J. Machine Co., Phila., Pa.

CONVEYING

See Conveyors

CORKING

Ermold, Edward Co., New York, N. Y. Horix Mfg. Co., Pittsburgh, Pa. Kiefer, Karl Machine Co., Cincinnati, Ohio Pneumatic Scale Corp., Ltd., North Quincy, Mass. Resina Automatic Machinery Co., Inc.,

U. S. Bottlers Machinery Co., Chicago, Ill.

COTTON INSERTING

Consolidated Packaging Machinery Corp., Buffalo, N. Y. Lakso Company, The, Fitchburg, Mass. New Jersey Machine Corp., Hoboken, N. J.

Colton, Arthur Co., Detroit, Mich. Ferguson, J. L. Co., Joliet, Ill. Redington, F. B., Co., Chicago, Ill. Triangle Package Machinery Co., Chicago, Veeder-Root Inc., Hartford, Conn

CRIMPING, COLLAPSIBLE TUBE

Arenco Machine Co., Inc., New York, N. Y. Colton, Arthur Co., Detroit, Mich. Stokes, F. J. Machine Co., Phila., Pa.

CRIMPING & SEALING (Heat Sealing Materials)

Amsco Packaging Machinery, Inc., Long Island City, N. Y. Cleveland Crimping Press Co., Cleveland,

Ohio
Container Equipment Corp., Newark, N. J.
Food Packaging Div. of Milprint, Inc., Milwaukee, Wis.
Gump, B. F. Co., Chicago, Ill.
Ivers-Lee Co., Newark, N. J.
Miller Wrapping & Sealing Machine Co.,
Chicago, Ill.

Chicago, Ill.

Potdevin Machine Co., Bklyn, N. Y.
Stokes, F. J. Machine Co., Phila., Pa.

Stokes & Smith Co., Phila., Pa.

Waldron, John Corp., New Brunswick, N. J.

Wells Mfg. Co., San Francisco, Calif.

Wenn Add Machine Co. Ire. Newgel, N. J.

Wrap-Ade Machine Co. Inc., Newark, N. J. DIE CUTTING

DIE COTTING

Champlain Div., Interchemical Corp., New York N. Y.

Globe Mfg., Phila., Pa.
Goat, Fred Co., Inc., The, Bklyn, N. Y.

Harris-Seybold-Potter Co., Dayton, Ohio
Hulbert Engineering Corp., Watertown, Wis.

Potdevin Machine Co., Bklyn, N. Y.

Smith & Winchester Mfg. Co., S. Windham,
Ohio Ohio

DOMING (Boxes)

Beck, Charles Machine Co., Phila., Pa. Globe Mfg. Co., Phila., Pa.
Globe Mfg. Co., Phila., Pa.
Hulbert Engineering Corp., Watertown, Wis.
Knowlton, M. D. Co., Rochester, N. Y.
New Jersey Machine Corp., Hoboken, N. J.

EMBOSSING

Hudson-Sharp Machine Co., Green Bay, Wis.
Knowlton, M. D. Co., Rochester, N. Y.
Marconetti, A. E. Inc., New York, N. Y.
Rutherford Machinery Co., Div. of General
Printing Ink Corp., New York, N. Y.
Waldron, John Corp., New Brunswick, N. J.

FIBRE CAN MAKING

Ferguson, J. L. Co., Joliet, Ill. Hudson-Sharp Machine Co., Green Bay, Wis. Hulbert Engineering Corp., Watertown, Wis. Knowlton, M. D. Co., Rochester, N. Y. Langston, Samuel M. Co., Camden, N. J.

FILLING, DRY (Gross and Net Weight)

Amsco Packaging Machinery, Inc., Long Island City, N. Y.
Arenco Machine Co., Inc., New York, N. Y.
Automatic Scale Co., Inc., New York, N. Y.
Battle Creek Bread Wrapping Machine Co.,
Battle Creek, Mich.
Consolidated Packaging Machinery Corp.,
Buffalo, N. Y.
Exact Weight Scale Co., The, Columbus,
Ohio

Ohio

Goat, Fred Co., Inc., The, Bklyn, N. Y. Gump, B. F. Co., Chicago, Ill.
Pneumatic Scale Corp., Ltd., North Quincy, Mass.

Mass.
Richard Machine Co., Battle Creek, Mich.
St. Regis Paper Co., New York, N. Y.
Stokes, F. J. Machine Co., Phila., Pa.
Stokes & Smith Co., Phila., Pa.
Syntron Co., Homer City, Pa.
Toledo Scale Co., Toledo, Ohio
Triangle Package Machinery Co., Chicago, 111.

U. S. Automatic Box Machinery Co., Inc., Boston, Mass.

FILLING, DRY (Volumetric)

Amsco Packaging Machinery, Inc., Long Island City, N. Y. Arenco Machine Co., Inc., New York, N. Y. Automatic Scale Co., Inc., New York, N. Y. Battle Creek Bread Wrapping Machine Co., Battle Creek, Mich.

Battle Creek, Mich.
Brown Bag Filling Machine Co., The, Fitchburg, Mass.
Consolidated Packaging Machinery Corp., Buffalo, N. Y.
Ferguson, J. L. Co., Joliet, Ill.
Goat, Fred Co., Inc., The, Bklyn, N. Y.
Ivers-Lee Co., Newark, N. J.
Peerless Products Mfg. Co., Detroit, Mich.
Pneumatic Scale Corp., Ltd., North Quincy, Mass.

Mass.
Stokes, F. J. Machine Co., Phila., Pa.
Stokes & Smith Co., Phila., Pa.
Syntron Co., Homer City, Pa.
Triangle Package Machinery Co., Chicago,

U. S. Automatic Box Machinery Co., Inc., Boston, Mass. Wright's Automatic Tobacco Packing Machine Co., Durham, N. C.

FILLING, LIQUID (Automatic and Semi-Automatic)

Alsop Engineering Corp., New York, N. Y. Arenco Machine Co., Inc., New York, N. Y. Colton, Arthur Co., Detroit, Mich. Crown Cork & Seal Co., The, Baltimore, Md. Food Machinery Corp., Sprague-Sells Div., Hoopeston, Ill.

Horix Manufacturing Co., Pittsburgh, Pa. Kiefer, Karl Machine Co., The, Cincinnati,

Liquid Carbonic Corp., The, Chicago, Ill. Pneumatic Scale Corp., Ltd., North Quincy,

Scientific Filter Co., New York, N. Y. U. S. Bottlers Machinery Co., Chicago, Ill. Vol-U-Meter Co., The, Buffalo, N. Y

FILLING SEMI-LIOU D (Viscose)

Colton, Arthur Co., Detroit, Mich. Crown Can Co., Phila., Pa. Food Machinery Corp., Sprague-Sells Div., Hoopeston, Ill. Horix Mfg. Co., Pittsburgh, Pa. Kiefer, Karl Machine Co., The, Cincinnati, Ohio

Pneumatic Scale Corp., Ltd., North Quincy,

Mass.
Scientific Filter Co., New York, N. Y.
Stokes, F. J. Machine Co., Phila., Pa.
Stokes & Smith Co., Phila., Pa.
U. S. Bottlers Machinery Co., Chicago, Ill.
Vol-U-Meter Co., The, Buffalo, N. Y.

LABELERS

Alsop Engineering Corp., New York, N. Y.
Arenco Machine Co., Inc., New York, N. Y.
Burt Machine Co., Baltimore, Md.
Economic Machinery Co., Worcester, Mass.
Ermold, Edward Co., New York, N. Y.
Ferguson, J. L. Co., Joliet, Ill.
Food Machinery Corp., Sprague-Sells Div.,
Hoopeston, Ill.
Gellman Mfg. Co. Rock Island, Ill. Gellman Mfg. Co., Rock Island, Ill.
Globe Mfg. Co., Phila., Pa.
Haida Engineering Co., Long Island City,
N. Y. N. Y. Liquid Carbonic Corp., The, Chicago, Ill. New Jersey Machine Corp., Hoboken, N. J. Oliver Machinery Co., Grand Rapids, Mich. Package Machinery Co., Springfield, Mass. Pneumatic Scale Corp., Ltd., North Quincy, Mass.
Potdevin Machine Co., Bklyn, N. Y.
Redington, F. B. Co., Chicago, Ill.
Standard-Knapp Corp., Portland, Conn.
Stokes & Smith Co., Phila., Pa.
Wright's Automatic Tobacco Packing Machine Co., Durham, N. C.

LAMINATING

Haida Engineering Co., Long Island City, Henschel, C. B. Mfg. Co., Milwaukee, Wis. Hudson-Sharp Machine Co., Green Bay, Wis.
Knowlton, M. D. Co., Rochester, N. Y.
Marconetti, A. E., Inc., New York, N. Y.
Meisel Press Mfg. Co., Boston, Mass.
Mor-Gan Laminating & Foliating Co., New York, N. Y.
Potdevin Machine Co., Bklyn, N. Y.
Rotogravure Engineering Corp., East Boston, Mass Waldron, John Corp., New Brunswick, N. J.

MARKING (Box & Carton)

Ferguson, J. L. Co., Joliet, Ill. Force, Wm. A. & Co., Inc., Bklyn, N. Y. Marconetti, A. E. Inc., New York, N. Y. Markem Machine Co., Keene, N. H. Peerless Roll Leaf Co., Inc., Union City,

METAL EDGE STAYING

National Metal Edge Box Co., Phila., Pa.

MILK BOTTLE HOODING

Aluminum Co. of America, Pittsburgh, Pa. Aluminum Seal Co., New Kensington, Pa. Crown Cork & Seal Co., The, Baltimore, Md. Package Machinery Co., Springfield, Mass.

NUMBERING, PRINTING OR PERFORATING

American Perforator Co., The, Chicago, Ill. Bates Mfg. Co., The, New York, N. Y. Force, Wm. A. & Co., Inc., Bklyn, N. Y. Harris-Seybold-Potter Co., Dayton, Ohio

Addresses of companies listed appear on pages 628-634

Markem Machine Co., Keene, N. H. Meisel Press Mfg. Co., Boston, Mass. New Jersey Machine Corp., Hoboken, N. J. Oliver Machinery Co., Grand Rapids, Mich. Potdevin Machine Co., Bklyn, N. Y.

PACKET FILLING

Amsco Packaging Machinery, Inc., Long Island City, N. Y.
Arenco Machine Co., Inc., New York, N. Y.
Automatic Scale Co., Inc., New York, N. Y.
Brown Bag Filling Machine Co., The,
Fitchburg, Mass.
Consolidated Packaging Machinery Corp.,
Buffalo, N. Y.
Ferguson, J. L. Co., Joliet, Ill.
Gump, B. F. Co., Chicago, Ill.
Hulbert Engineering Corp., Watertown, Wis.
Redington, F. B. Co., Chicago, Ill.
Stokes & Smith Co., Phila., Pa.
Triangle Package Machy., Co., Chicago, Ill.
U. S. Automatic Box Machinery Co. Inc.,
Boston, Mass.
Wright's Automatic Tobacco Packing Machine Co., Durham, N. C.

PAPER BAG FEEDING, OPENING, WEIGH-ING & CLOSING

(Automatic)

Arenco Machine Co., Inc., New York, N. Y. Bemis Bro. Bag Co., St. Louis, Mo. Betner, Benj. C. Co., Devon, Pa. Cleveland Crimping Press Co., Cleveland, Ohio

Consolidated Packaging Machine Co., Buffalo, N. Y.

Gump, B. F. Co., Chicago, Ill.
Interstate Folding Box Co., The, Middletown, Ohio

Redington, F. B. Co., Chicago, Ill.
Stokes & Smith Co., Phila., Pa.

St. Regis Paper Co., New York, N. Y.

PAPER ROLL FEEDING

Cameron Machine Co., Brooklyn, N. Y Champlain Div., Interchemical Corp., New York, N. Y. Ferguson, J. L. Co., Joliet, Ill. Hudson-Sharp Machine Co., Green Bay, Wis. Marconetti, A. E. Inc., New York, N. Y. Modern Equipment Corp., Defiance, Ohio Rotogravure Engineering Co., E. Boston, Mass. Wright's Automatic Tobacco Packing Machine Co., Durham, N. C.

PARTITION ASSEMBLING

Hooper, F. X. Co., Inc., Glenarm, Md. Inman Mfg. Co., Inc., Amsterdam, N. Y. Standard-Knapp Corp., Portland, Conn.

PREFORMING & TABLETTING

Colton, Arthur Co., Detroit, Mich. Stokes, F. J. Machine Co., Phila., Pa.

REVENUE STAMP APPLYING FOR BOTTLES

New Jersey Machine Corp., Hoboken, N. J. Wright's Automatic Tobacco Packing Machine Co., Durham, N. C.

RIGID TRANSPARENT FABRICATING

Able Machine & Tool Works, New York, N. Y. Camford Machine Corp., New York, N. Y. Globe Mfg. Co., Phila., Pa. Hulbert Engineering Corp., Watertown, Wis. Knowlton, M. D. Co., Rochester, N. Y. National Metal Edge Box Co., Phila., Pa. Taber Instrument Co., N. Tonawanda, N. Y.

ROLL LEAF STAMPING

Couglin Mfg. Co., New York, N. Y., Griffin, Campbell, Hayes, Walsh, Inc., New York, N. Y. Markem Machine Co., Keene, N. H. Peerless Roll Leaf Co., Inc., Union City, N. J.

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ROLL SLITTERS & REWINDERS

Beck, Chas. Machine Co., Phila., Pa. Cameron Machine Co., Bklvn, N. Y. Chambon, L. Corp., New York, N. Y. Champlain Div., Interchemical Corp., New York, N. Y. Globe Mfg. Co., Phila., Pa. Kidder Press Co., Inc., Dover, N. H. Knowlton, M. D. Co., Rochester, N. Y. Langston, Samuel M. Co., Camden, N. J. Meisel Press Mfg. Co., Boston, Mass. Potdevin Machine Co., Bklyn, N. Y. Rotogravure Engineering Corp., E. Boston, Mass. Waldron, John Corp., New Brunswick, N. J.

SHEET FEEDING

Hudson-Sharp Machine Co., Green Bay, Wis.
Marconetti, A. E. Inc., New York, N. Y.
Wright's Automatic Tobacco Packing Machine Co., Durham, N. C.

SHEETING

Amsco Packaging Machinery, Inc., Long Island City, N. Y.
Beck, Chas. Machine Co., Phila., Pa.
Champlain Div., Interchemical Corp., New York, N. Y.
Globe Mfg. Co., Phila., Pa.
Hudson-Sharp Machine Co., Green Bay, Wis.
Kidder Press Co., Inc., Dover, N. H.
Knowlton, M. D. Co., Rochester, N. Y.
Meisel Press Mfg. Co., Boston, Mass.
Miller Wrapping & Sealing Machine Co.,
Chicago, Ill.
Peters Machinery Co., Chicago, Ill.
Potdevin Machine Co., Bklyn, N. Y.
Wrap-Ade Machine Co., Inc., Newark, N. J.

STATIC ELIMINATING

Kidder Press Co., Inc., Dover, N. H. Potdevin Machine Co., Bklyn, N. Y. Simco Co., The, Phila., Pa.

STENCIL CUTTING

Bradley, A. J. Mfg. Co., New York, N. Y. Diagraph-Bradley Stencil Machine Corp., St. Louis, Mo. Ideal Stencil Machine Co., Racine, Wis. Knowlton, M. D. Co., Rochester, N. Y. Marsh Stencil Machine Co., Belleville, Ill.

STRIP COMBINING

(For Window Bags & Wrappers)
Cameron Machine Co., Bklyn, N. Y.

TABLET COUNTING & PACKAGING

Arenco Machine Co., Inc., New York, N. Y. Colton, Arthur Co., Detroit, Mich. Ivers-Lee Co., Newark, N. J. Redington, F. B. Co., Chicago, Ill. Stokes, F. J. Machine Co., Phila., Pa. Stokes & Smith Co., Phila., Pa. Triangle Package Machinery Co., Chicago, Ill. U. S. Automatic Box Machinery Co., Inc., Boston, Mass.

TIGHT WRAPPING (For Carton Shells)

Pneumatic Scale Corp., Ltd., North Quincy, Mass. Stokes & Smith Co., Phila., Pa. U. S. Automatic Box Machinery Co. Inc., Boston, Mass.

TUBE LACQUERING, VARNISHING & PRINTING

Hudson-Sharp Machine Co., Green Bay, Wis. Rutherford Machinery Co., Div. Gen. Printing Ink Corp., New York, N. Y.

WEIGHING

See Scales

WIRE STAPLING

WIRE STAPLING
Acme Staple Co., Camden, N. J.
Acme Steel Co., Chicago, Ill.
Bates Mfg. Co., The, New York, N. Y.
Bostitch, Inc., East Greenwich, R. I.
Globe Mfg. Co., Phila., Pa.
Heller Co., The, Cleveland, Ohio
Ideal Stitcher & Mfg. Co., Racine, Wis.
Inland Container Corp., Indianapolis, Ind.
Knowlton, M. D. Co., Rochester, N. Y.
Paslode Co., Chicago, Ill.
Saranae Machine Co., Benton Harbor,
Mich.

WIRE STITCHING

Acme Steel Co., Chicago, Ill.
Bostitch, Inc., East Greenwich, R. I.
Dexter Folder Co., New York, N. Y.
Globe Mfg. Co., Phila., Pa.
Harris-Seybold-Potter Co., Dayton, Ohio
Heller Co., The, Cleveland, Ohio
Ideal Stitcher & Mfg. Co., Racine, Wis.
Knowlton, M. D. Co., Rochester, N. Y.
Paslode Co., Chicago, Ill.
Saranae Machine Co., Benton Harbor,
Mich.

WRAPPING

Amsco Packaging Machinery, Inc., Long Island City, N. Y.
Battle Creek Bread Wrapping Machine Co., Battle Creek, Mich.
Colton, Arthur Co., Detroit, Mich.
Gellman Mfg. Co., Rock Island, Ill.
Globe Mfg. Co., Phila., Pa.
Hayssen Mfg. Co., Sheboygan, Wis.
Hudson-Sharp Machine Co., Green Bay, Wis.
Ivers-Lee Co., Newark, N. J.
Miller Wrapping & Sealing Machine Co., Chicago, Ill.
Modern Equipment Corp., Defiance, Ohio National Bread Wrapping Machine Co., Springfield, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Package Machinery Co., Springfield, Mass.
Redington, F. B. Co., Chicago, Ill.
Richard Machine Co., Battle Creek, Mich.
Scandia Mfg. Co., N. Arlington, N. J.
Stokes & Smith Co., Philadelphia, Pa.
U. S. Automatic Box Machinery Co., Inc.,
Boston, Mass.

MOLDERS, PLASTIC American Insulator Corp., New Freedom,

Pa.
American Molded Products Co., Chicago, Ill.
American Molding Co., San Francisco, Calif.
Amos-Thompson Corp., Edinburgh, Ind.
Armstrong Cork Co., Lancaster, Pa.
Auburn Button Works, Inc., Auburn, N. Y.
Boonton Molding Co., Boonton, N. J.
Bridgeport Moulded Prod. Inc., Bridgeport, Conn.
Bryant Electric Co., Bridgeport, Conn.
Butterfield, T. F. Inc., Naugatuck, Conn.
Chicago Molded Products Corp., Chicago.
Ill.
Colt's Patent Fire Arms Mfg. Co., Hartford,
Conn.
Columbia Protektosite Co. Inc., Carlstadt,
N. J.

Columbia Protektosite Co. Inc., Carlstadt, N. J.
Columbus Plastic Products Co. Inc., Columbus, Ohio
Consolidated Molded Products Corp., Scranton, Pa.
Diemolding Corp., Canastota, N. Y.
Eclipse Moulded Products Co., Milwaukee, Wis.
Erie Resistor Corp., Erie, Pa.

Firestone Rubber & Latex Products Co.,

Fall River, Mass.
Franklin Plastics Div., Robinson Industries Inc., Franklin, Pa.
General Electric Co., Plastics Dept., Pitts-

field, Mass.
General Industries Co., Elyria, Ohio
Grigoleit Co., The, Decatur, Ill.
Imperial Molded Products Corp., Chicago,

Ill.
Kuhn & Jacob Moulding & Tool Co., Trenton, N. J.
Kurz-Kasch Inc., Dayton, Ohio
Mack Molding Co., Wayne, N. J.
Mason, Thomas Co., Inc., The, Stamford, Conn.

Michigan Molded Plastics Inc., Dexter, Mich.

Mich.
Mills, Elmer E. Corp., Chicago, Ill.
Molded Insulation Co., Phila., Pa.
National Plastics, Inc., Knoxville, Tenn.
Niagara Insul-Bake Specialty Co., Inc.,
Albany, N. Y.
Northern Industrial Chem. Co., Boston,

Mass.
Norton Laboratories Inc., Lockport, N. Y.
Plastic Molding Corp., Sandy Hook, Conn.
Plastimold, Inc., Attleboro, Mass.
Rathbun Molding Corp., Salamanca, N. Y.
Recto Molded Prods. Inc., Cincinnati, Ohio
Reynolds Spring Co., Molded Plastics Div.,

Cambridge, Ohio
Richardson Co., The, Chicago, Ill.
Sinko Tool & Mfg. Co., Chicago, Ill.
Sterling Plastics Co., Union, N. J.
Superior Plastic Co., Chicago, Ill.
Tech-Art Plastics Co., Long Island City,

Terkelsen Machine Co., Boston, Mass. Universal Plastics Corp., New Brunswick, N. I.

Van Norman Molding Co., Chicago, Ill. Victor Metal Products Corp., Bklyn., N. Y. Voges Manufacturing Co., The, Ozone Park,

L. I., N. Y.

Walco Plastics Co., E. Orange, N. J.

Waterbury Button Co., Waterbury, Conn.
Watertown Mfg. Co., Watertown, Conn.
Windman Bros., Los Angeles, Calif.
Zenith Plastics, Inc., Cleveland, Ohio

OPENING TAPE

(For Cellophane Packages)

Chicago Printed String Co., Chicago, Ill.
Dobeckmun Co., The, Cleveland, Ohio
du Pont de Nemours, E. I. & Co., Inc., Wilmington, Del.
Fibre Cord Co., New York, N. Y.
Food Packaging, Div. of Milprint Inc.,
Milwaukee, Wis.
Shellmar Products Co., Mt. Vernon, Ohio
Sylvania Industrial Corp., New York, N. Y.

PACKAGE DESIGN CONSULTANTS

(Independent Organizations)

Cruze, Charles, Los Angeles Wheeler, Leon A., Los Angeles

Connecticut

Cheron, Pierre I., Stratford Hall, Frances Cushing, Westport Post & Johnson, Inc., Hartford

Georgia

Grau, Russell, Atlanta

Illinois

Bielefield, Inc., Herbert, Chicago Carter, Joseph, Chicago Chirpe, W. Rodney, Chicago Farrel, Harry H., Chicago Jones, E. Willis, Chicago

Knoche, Lucille, Chicago Koch, Karl Peter, Chicago Ressinger, Paul, Chicago Spuehler, Ernst A., Chicago Thelander, Clement J., Chicago

Massachusetts

Baermann, Walter, Holyoke Marsh, George, Boston

Michigan

Cooper, R. G., Detroit Swibold, Duane, Royal Oak

Ditch, Ruth M., St. Louis

New Jersey

Chipman, Richmond Lane Jr., Mont-

Aids, Inc., New York City
Allen, Arthur S., New York City
Bayer, Herbert, New York City
Bellisio, Bartolomeo, New York City
Bernhard, Lucian, New York City
Bernhard, Lucian, New York City
Berni, Alan, New York City
Blumenthal, Margaret, New York City
Brodton, Lynn, New York City
Coldrake, Rene, New York City
Collura, Francesco, New York City
Collura, Francesco, New York City
Condon, Frank, New York City
Condon, Frank, New York City
Davison, George, New York City
De Nina, James Andrew, New York City
Dohner, Donald, New York City
Donne, Liam, New York City
Federico, Joseph B., Niagara Falls
Freeman, Edna Leslie, New York City
Gianninoto, Frank, New York City
Goldsborough, Francis F., New York
City
Grover, Frederic S. Rochester City

Grover, Frederic S., Rochester Grover, Frederic S., Rochester
Haverlee, Arnold H., New York City
Hodges, Inc., Guy W., New York City
Hornung, Clarence P., New York City
Karasz, Ilonka, Brewster
Ketcham, Howard, New York City
Kogan, Belle, New York City
Koodin, Ben, New York City
Koster, Louis, H., New York City
Lapper, Jack D., New York City
Lewis, Ben, New York City
Lux, Eugene J., New York City
Martiall & Scull New York City
Martiall & Scull New York City Lewis, Ben, New York City
Lux, Eugene J., New York City
Martiall & Scull, New York City
Maurer, Sascha A., New York City
Mayer, Fred A., New York City
Mayer, Fred A., New York City
Mash, Ben, New York City
Nickelson, John, Flushing
O'Neil, Wm., New York City
Phenix Associates, New York City
Sakier, George, New York City
Scheele, Edwin H., New York City
Scheele, Edwin H., New York City
Schusterman, Wm. V., Bronx
Stott, R. Doulton, New York City
Tarpey, Thomas, Bronx
Ullman, Martin, New York City
Weeks, Wentworth, New York City
Welder, W. Archibald, New York City
Wolder, W. Archibald, New York City
Woodbury, C. O., New York City

Designers for Industry, Inc., Cleveland

Pennsylvania

Kline, Leon M., York

PACKAGING, CUSTOM

Jamieson, C. E. & Co., Detroit, Mich. New England Collapsible Tube Co., Chicago, Ill.

Strong Cobb & Co., Inc., Cleveland, Ohio Trans-Pac Services, Inc., New York, N. Y. Unit Packages, Inc., Elizabeth, N. J. Walco Plastics, East Orange, N. J.

PACKETS

American Paper Goods Co., Kensington,

Berkowitz Envelope Co., Kansas City, Mo. Bradner Smith & Co., Chicago, Ill. Brown Bag Filling Machine Co., The, Fitchburg, Mass.
Continental Bag Specialties Corp., New

Continental Bag Specialties Corp., New York, N. Y.
Cupples-Hesse Corp., St. Louis, Mo.
Dennison Mfg. Co., Framingham, Mass.
Equitable Paper Bag Co., Inc., Long Island City, N. Y.
Humitube Mfg. Co., Peoria, Ill.
Mason Envelope Co., New York, N. Y.
Neostyle, Inc., Chicago, Ill.
Oneida Paper Prods., Inc., New York, N. Y.
Reynolds Metals Co., Richmond, Va.
Royal Paper Corp., New York, N. Y.
Stecher-Traung Litho. Corp., Rochester,
New York
Tension Envelope Corp., New York, N. Y.

New York
Tension Envelope Corp., New York, N. Y.
Tower Envelope Co., New York, N. Y.
U. S. Envelope Co., Springfield, Mass.
Wolf Bros., Phila., Pa.

PADDING & WADDING

American Lace Paper Co., Milwaukee, Wis. Excelsior Paper Specialties Co., New York,

Kimberly-Clark Corp., Chicago, Ill. Republic Paperboard Co., The, Cincinnati, Ohio

Rinkle Krinkle Paper Co., Boston, Mass. Sweetnam, Geo. H., Inc., Cambridge, Mass. Union Wadding Co., Pawtucket, R. I.

PAPER

ALKALI-PROOF

Fitchburg Paper Co., Fitchburg, Mass.
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.

Port Huron Sulphite & Paper Co., Port Huron, Mich.
Riegel Paper Corp., The, New York, N. Y.
Union Carbide & Carbon Corp., New York,
N. Y.

Warren, S. D. Co., Boston, Mass.

ANTI-TARNISH

Crystal Tissue Co., The, Middletown, Ohio Dejonge, Louis & Co., New York, N. Y. Fitchburg Paper Co., Fitchburg, Mass. Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich. Mosinee Paper Mills Co., Mosinee, Wis. Riegel Paper Corp., The, New York, N. Y. Sweetnam, Geo. H. Inc., Cambridge, Mass. Warren, S. D. Co., Boston, Mass. Williams, Chas. W. & Co., Inc., New York, N. Y.

CELLULOSE LAMINATED

Dobeckmun Co., The, Cleveland, Ohio U. S. Finishing & Mfg. Co., Chicago, Ill.

(Flexible, Wrapping & Packing)

Ashtabula Corrugated Box Co., The, Ashtabula, Ohio
Blake, Moffitt & Towne, San Francisco,
Calif.

Fibreboard Products, Inc., San Francisco,

Fort Wayne Corrugated Paper Co., Fort Wayne, Ind. Gair, Robert Co., Inc., New York, N. Y. Grand-City Container Corp., New York, N. Y. Hinde & Dauch Paper Co., Sandusky, Ohio

Addresses of companies listed appear on pages 628-634

PACKAGING CATALOG

Inland Container Corp., Indianapolis, Ind.
National Container Corp., Long Island
City, N. Y.
Owens-Illinois Packaging Service, Toledo,

Salwen, Joe Paper Co., New York, N. Y. Sherman Paper Products Corp., Newton Upper Falls, Mass. Sweetnam, Geo. H. Inc., Cambridge, Mass.

CORRUGATED

(For Window Trimming)

Excelsior Paper Specialties Co., New York,

N. Y. Fibreboard Prods., Inc., San Francisco,

Calif.

Hankins Container Co., Cleveland, Ohio

Hinde & Dauch Paper Co., Sandusky, Ohio

Inland Container Corp., Indianapolis, Ind.

Reyburn Mfg. Co., Inc., The, Phila., Pa.

Sherman Paper Products Corp., Newton Upper Falls, Mass.

Sweetnam, Geo. H. Inc., Cambridge, Mass.

CREPE

American Tissue Mills, Holyoke, Mass. Dennison Mfg. Co., Framingham, Mass. Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich. Mosinee Paper Mills Co., Mosinee, Wis Reyburn Mfg. Co., Inc., The, Phila., Pa. Rinkle Krinkle Paper Co., Boston, Mass. Sherman Paper Prod. Corp., Newton Upper Falls, Mass. Sweetnam, Geo. H. Inc., Cambridge, Mass.

EXCELSIOR & SHREDDED

American Excelsior Corp., Chicago, Ill. Atlantic Excelsior Co., Inc., New York, NV N. Y.
Ben Mont Papers, Inc., Bennington, Vt.
Crystal Tissue Co., The, Middletown, Ohio
Daniels Mfg. Co., Rhinelander, Wis.
Dennison Mfg. Co., Framingham, Mass.
Excelsior Paper Specialties Co., New York, NV Inland Container Corp., Indianapolis, Ind. Kalamazoo Vegetable Parchment Co., Kala-mazoo, Mich. Sweetnam, Geo. H. Inc., Cambridge, Mass.

FANCY PRINTED OR EMBOSSED Aldine Paper Co., New York, N. Y. Ben Mont Papers, Inc., Bennington, Vt. Blake, Moffitt & Towne, San Francisco, Calif. Bradner Smith & Co., Chicago, Ill.
Chicago Printed String Co., Chicago, Ill.
Crown Zellerbach Corp., San Francisco, Crystal Tissue Co., The, Middletown, Ohio Decotone Products, Fitchburg, Mass. Dejonge, Louis & Co., New York, N. Y. Dennison Mfg. Co., Framingham, Mass. District of Columbia Paper Mills, Inc., Washington, D. Washington, D. C. Eureka Specialty Prtg. Co., Scranton, Pa. Hampden Glazed Paper & Card Co., Holyoke, Mass. Hazen Paper Co., Holyoke, Mass. Hinkson Paper Co., Palmer, Mass. Holyoke Card & Paper Co., Springfield, Mass. Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich. mazoo, Mich.
Keller-Dorian Paper Co., New York, N. Y.
Kupfer Bros. Paper Co., Chicago, Ill.
Marvellum Co., The, Holyoke, Mass.
Matthias Paper Corp., Phila., Pa.
Middlesex Prod. Corp., Cambridge, Mass.
Narragansett Coated Paper Corp., Pawtucket, R. I. Nashua Gummed & Coated Paper Co.,

Paper City Mfg. Co., Inc., Holyoke, Mass. Pejepscot Paper Co., New York, N. Y. Racquette River Paper Co., Potsdam, N. Y. Reynolds Metals Co., Richmond, Va.
Riegel Paper Corp., The, New York, N. Y.
Royal Paper Corp., New York, N. Y.
Sanderson Products, Inc., New York, N. Y. Springfield Coated Paper Corp., Camden, Stecher-Traung Lithograph Corp., Rochester, N. Y.

Stevens-Nelson Paper Corp., The, New York, N. Y. Sweetnam, Geo. H. Inc., Cambridge, Mass. Trade Lithograph & Printing Co., New Trautmann, Bailey & Blampey, New York,

United Mfg. Co., Springfield, Mass. Williams, Chas. W. & Co., Inc., New York,

Wyomissing Glazed Paper Co., Reading, Pa.

FINISHERS

(Lacquers & Varnishes)

American Label Cutting Co., New York, N. Y. American Label Cutting Co., New York, N. Y. Chasen, Alex & Co., Phila., Pa. Chatfield Paper Co., Cincinnati, Ohio Crawford, John W., Co., New York, N. Y. Johnston Paper Co., The, Cincinnati, Ohio Lithographers Finishing Co., New York, N. Y. Lowery & Schwartz, Inc., New York, N. Y. Perfect Finishing Co., Inc., New York, N. Y. Schneider Bros. Co., Phila., Pa. U. S. Finishing & Mfg. Co., Chicago, Ill. Wiener Bros. Co., Inc., New York, N. Y.

FLINT GLAZED

Blake.

lake, Moffitt & Towne, San Francisco, Calif. Bradner Smith & Co., Chicago, Ill.
Dejonge, Louis & Co., New York, N. Y.
Fitchburg Paper Co., Fitchburg, Mass.
Hampden Glazed Paper & Card Co., Holyoke, Mass. Hazen Paper Co., Holyoke, Mass. Hazen Paper Co., Holyoke, Mass.
Hinkson Paper Co., Palmer, Mass.
Kupfer Bros. Paper Co., Chicago, Ill.
Matthias Paper Corp., Phila., Pa.
McLaurin-Jones Co., Brookfield, Mass.
Royal Paper Corp., New York, N. Y.
Sanderson Products, Inc., New York, N. Y.
Williams, Chas. W. & Co., Inc., New York, N. Y. Wyomissing Glazed Paper Co., Reading, Pa.

FRICTION GLAZED

Blake, Moffitt & Towne, San Francisco, Calif. Bradner Smith & Co., Chicago, Ill. Crown Zellerbach Corp., San Francisco, Calif. Dejonge, Louis & Co., New York, N. Y. Fitchburg Paper Co., Fitchburg, Mass. Hampden Glazed Paper & Card Co., Holyoke, Mass oke, Mass.
Hinkson Paper Co., Palmer, Mass.
Kupfer Bros. Paper Co., Chicago, Ill.
Marvellum Co., The, Holyoke, Mass.
Matthias Paper Corp., Phila., Pa.
Middlesex Products Corp., Cambridge, Mass. Narragansett Coated Paper Corp., Pawtucket, R. I.

Nashua Gummed & Coated Paper Co.,
Nashua, N. H. New England Card & Paper Co., Inc., Springfield, Mass. Springfield, Mass.

Paper Affiliates Co. Inc., New York, N. Y.

Royal Paper Corp., New York, N. Y.

Sanderson Products, Inc., New York, N. Y.

Springfield Coated Paper Corp., Camden, N. J. United Mfg. Co., Springfield, Mass. Williams, Chas. W. & Co., Inc., New York,

Wyomissing Glazed Paper Co., Reading, Pa.

GLASSINE

(Plain and Embossed)

Daniels Mfg. Co., Rhinelander, Wis. Deerfield Glassine Co., Monroe Bridge, Mass. Dennison Mfg. Co., Framingham, Mass. Hamersley Mfg. Co., The, Garfield, N. J. Hartford City Paper Co., New York, N. Y. Nashua Gummed & Coated Paper Co., Now York, N. Y. Nashua Gummed & Coated Paper Co., Nashua, N. H.

Newark Paraffine & Parchment Paper Co.,

Newark Paratime & Parenment Paper Co., Newark, N. J. Rhinelander Paper Co., Rhinelander, Wis. Riegel Paper Corp., The, New York, N. Y. Westfield River Paper Co., Inc., Russell, Mass.

GUMMED

Angier Corp., Framingham, Mass.
Better Packages, Inc., Shelton, Conn.
Brown-Bridge Mills, Inc., The, Troy, Ohio
Dennison Mfg. Co., Framingham, Mass.
Gummed Products Co., The, Troy, Ohio
Gummed Tape & Devices Co., Bklyn, N. Y. McLaurin-Jones Co., Brookfield, Mass. Mid-States Gummed Paper Co., Chicago,

Nashua Gummed & Coated Paper Co... Nashua, N. H. Rexford Paper Co., Milwaukee, Wis.

IMITATION LEATHER

Aldine Paper Co., New York, N. Y. Atlas Powder Co., Zapon Div., Stamford, Conn. Blake, Moffitt & Towne, San Francisco, Calif. Calif.
Bradner Smith & Co., Chicago, Ill.
Dejonge, Louis & Co., New York, N. Y.
du Pont de Nemours, E. I. & Co., Inc., Wilmington, Del.
Hampden Glazed Paper & Card Co., Holyoka, Macc. oke, Mass. Hazen Paper Co., Holyoke, Mass. Hinkson Paper Co., Palmer, Mass. Holyoke Card & Paper Co., Springfield Mass.

Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Kupfer Bros. Paper Co., Chicago, Ill.
Marvellum Co., The, Holyoke, Mass.
Matthias Paper Corp., Phila., Pa.
Middlesex Products Corp., Cambridge, Narragansett Coated Paper Corp., Pawtucket, R. I.

New England Card & Paper Co., Inc., Springfield, Mass. Paper Affiliates Co. Inc., New York, N. Y. Pyrotex Leather Co., Leominster, Mass. Racquette River Paper Co., Potsdam, N. Y. Riegel Paper Corp., The, New York, N. Y. Royal Paper Corp., New York, N. Y. Sanderson Products, Inc., New York, N. Y. Springfield Coated Paper Corp., Camden,

Textileather Corp., Toledo, Ohio United Mfg. Co., Springfield, Mass. Williams, Chas. W. & Co., Inc., New York, N. Y.

Angier Corp., Framingham, Mass.
Arkell Safety Bag Co., New York, N. Y.
Brown Co., Portland, Me.
Gaylord Container Corp., St. Louis, Mo.
Hollingsworth & Whitney Co., Boston, Mass.
International Paper Co., New York, N. Y.
Mosinee Paper Mills Co., Mosinee, Wis.
National Container Corp., Long Island
City, N. Y.
Paterson Parchment Paper Co., Bristol, Pa.
St. Regis Paper Co., New York, N. Y.
Sisalkraft Co., The, Chicago, Ill.
Union Bag & Paper Corp., New York, N. Y.
West Virgina Pulp & Paper Co. New York West Virginia Pulp & Paper Co., New York, N. Y.

New England Card & Paper Co., Inc.,

Paper Affiliates Co., Inc., New York, N. Y.

Nashua, N. H.

Springfield, Mass.

METALLIC-COATED (Plain and Embossed)

Aldine Paper Co., New York, N. Y Artcote Papers, Inc., Irvington, N. J.
Blake, Moffitt & Towne, San Francisco,
Calif. Bradner Smith & Co., Chicago, Ill.

Decotone Products, Fitchburg, Mass.

Dejonge, Louis & Co., New York, N. Y.

Eureka Specialty Printing Co., Scranton,

Hampden Glazed Paper & Card Co., Holyoke, Mass.

oke, Mass. **Hazen Paper Co., Holyoke, Mass.** Hinkson Paper Co., Palmer, Mass. Holyoke Card & Paper Co.. Springfield, Mass.

Johnston Tin Foil & Metal Co., The, St. Louis, Mo.

Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.

mazoo, Mich.
Keller-Dorian Paper Co., New York, N. Y.
Kupfer Bros. Paper Co., Chicago, Ill.
Marvellum Co., The, Holyoke, Mass.
Matthias Paper Corp., Phila., Pa.
McLaurin-Jones Co., Brookfield, Mass.
Middlesex Products Corp., Cambridge,

Miller Paper Co., New York, N. Y.
Narragansett Coated Paper Corp., Pawtucket, R. I.
Nashua Gummed & Coated Paper Co.,

Nashua Gummed & Coated Paper Co., Nashua, N. H.

New England Card & Paper Co., Inc., Springfield, Mass.

Paper Affiliates Co., Inc., New York, N. Y.

Pauli, Karl Corp., New York, N. Y.

Pyrotex Leather Co., Leominster, Mass.

Racquette River Paper Co., Potsdam, N. Y.

Reynolds Metals Co., Richmond, Va.

Riegel Paper Corp., New York, N. Y.

Royal Paper Corp., New York, N. Y.

Sanderson Products, Inc., New York, N. Y.

Stevens-Nelson Paper Corp., The, New York, N. Y.

York, N. Y.
Tamm & Co., New York, N. Y.
United Mfg. Co., Springfield, Mass.
Williams, Chas. W. & Co., Inc., New York, Wyomissing Glazed Paper Co., Reading, Pa.

PARCHMENT

Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich. Paterson Parchment Paper Co., Bristol, Pa

PYROXYLIN-COATED

Aldine Paper Co., New York, N. V.

Artcote Papers, Inc., Irvington, N. J.
Atlas Powder Co., Zapon-Keratol Div., Stamford, Conn.
Blake, Moffitt & Towne, San Francisco,
Calif. Dejonge, Louis & Co., Chicago, Ill.
Dejonge, Louis & Co., New York, N. Y.
Dennison Mfg. Co., Framingham, Mass.
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oke, Mass. **Hazen Paper Co., Holyoke, Mass.** Hinkson Paper Co., Palmer, Mass. Holyoke Card & Paper Co., Springfield, Mass

Mass.
Kupfer Bros. Paper Co., Chicago, Ill.
Marvellum Co., The, Holyoke, Mass.
Matthias Paper Corp., Phila., Pa.
Nashua Gummed & Coated Paper Co.,

Nashua Gummed & Coated Paper Co., Nashua, N. H.

New England Card & Paper Co., Inc., Springfield, Mass.

Paper Affiliates Co., Inc., New York, N. Y.

Pejepscot Paper Co., New York, N. Y.

Racquette River Paper Co., The, Potsdam, N. Y.

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Kupfer Bros. Paper Co., Chicago, Ill.
Nashua Gummed & Coated Paper Co.,

Nashua, N. H.
Sanderson Products, Inc., New York, N. Y.
Stevens-Nelson Paper Corp., The, New
York, N. Y.

Williams, Chas. W. & Co., Inc., New York,

WAXED

American Tissue Mills, Holyoke, Mass. Ben Mont Papers, Inc., Bennington, Vt. Central Waxed Paper Co., Inc., Chicago

Crystal Tissue Co., The, Middletown, Ohio Dixie Wax Paper Co., Inc., Dallas, Texas Hamersley Mfg. Co., The, Garfield, N. J. Henle Wax Paper Mfg. Co., Inc., New York, N. Y.

Kalamazoo Vegetable Parchment Co., Kala-

mazoo, Mich.

Menasha Products Co., The, Menasha, Wis.
Nashua Gummed & Coated Paper Co.,
Nashua, N. H.

Newark Paraffine & Parchment Paper Co., Newark, N. J. Paterson Parchment Paper Co., Bristol, Pa

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Riegel Paper Corp., New York, N. Y. Shawmut Waxed Paper Co., Holliston, Mass. Thilmany Pulp & Paper Co., Kaukauna,

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oke Mass. Hazen Paper Co., Holyoke, Mass. Hinkson Paper Co., Palmer, Mass. Holyoke Card & Paper Co., Springfield,

Mass.
Kupfer Bros. Paper Co., Chicago, Ill.
Marvellum Co., The, Holyoke, Mass.
Matthias Paper Corp., Phila., Pa.
Middlesex Products Co., Cambridge, Mass.
Nashua Gummed & Coated Paper Co.,

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Springfield Coated Paper Corp., Camden, N. J.

N. J.
Stevens-Nelson Paper Corp., The, New York, N. Y.
United Mfg. Co., Springfield, Mass.
Williams, Chas. W. & Co., Inc., New York,

WRAPPING (Fancy Tissue)

Aldine Paper Co., New York, N. Y.
American Tissue Mills, Holyoke, Mass.
Ben Mont Papers, Inc., Bennington, Vt.
Bradner Smith & Co., Chicago, Ill.
Chicago Printed String Co., Chicago, Ill.
Crown Zellerbach Corp., San Francisco,
Calif.

Caur.
Crystal Tissue Co., The Middletown, Ohio
Decotone Products, Fitchburg, Mass.
Dejonge, Louis & Co., New York, N. Y.
Dennison Mfg. Co., Framingham, Mass.
Du-Tone Ribbon Corp., New York, N. Y.
Hampden Glazed Paper & Card Co., Holyoke Mass.

Hampden Glazed Paper & Card Co., Holyoke, Mass.

Kupfer Bros. Paper Co., Chicago, Ill.

Marvellum Co., The, Holyoke, Mass.

Matthias Paper Corp., Phila., Pa.

Nashua Gummed & Coated Paper Co., Nashua, N. H.

Nashua, N. H.
Pejepscot Paper Co., New York, N. Y.
Royal Paper Corp., New York, N. Y.
Sanderson Products, Inc., New York, N. Y.
Springfield Coated Paper Corp., Camden, Stevens-Nelson Paper Corp., The, New

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du Pont de Nemours, E. I. & Co., Inc., Wilmington, Del. Röhm & Haas Co., Inc., Phila., Pa.

CASEIN

American Plastics Corp., New York, N. Y.

CAST PHENOL

Bakelite Corp., New York, N. Y.
Catalin Corp., New York, N. Y.
Knoedler, A. Co., Lancaster, Pa.
Marblette Corp., Long Island City, N. Y.
Monsanto Chemical Co., Plastics Div.,
Springfield, Mass.

CELLULOSE ACETATE

Bakelite Corp., New York, N. Y. Celanese Celluloid Corp., New York, N. Y. Cournand, E. L., Inc., New York, N. Y.

Addresses of companies listed appear on pages 628-634

PACKAGING CATALOG

Mass.

du Pont de Nemours, E. I. & Co., Inc., Wilmington, Del.

Hercules Powder Co., Wilmington, Del.

Monsanto Chemical Co., Plastics Div.,
Springfield, Mass.

Nixon Nitration Works, Nixon, N. J.

Price, M. B. Associates, New York, N. Y.

Tennessee Eastman Corp., Kingsport, Tenn.

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Hercules Powder Co., Wilmington, Del.

Monsanto Chemical Co., Plastics Div., Springfield, Mass.

Nixon Nitration Works, Nixon, N. J.

ETHYL CELLULOSE

Dow Chemical Co., The, Midland, Mich. Hercules Powder Co., Wilmington, Del. Nixon Nitration Works, Nixon, N. J.

Bakelite Corp., New York, N. Y. Durez Plastics & Chemicals, Inc., N. Tonawanda, N. Y.

Durite Plastics & Chemicals, Inc., N. Tonawanda, N. Y.

Durite Plastics, Inc., Phila., Pa.

Heresite & Chemicals Co., Manitowoc, Wis.

Makalot Corp., Boston, Mass.

Monsanto Chemical Co., Plastics Div.,

Springfield, Mass. Reilly Tar & Chemical Corp., Indianapolis, Ind.

PHENOL-FURFURAL

Durite Plastics, Inc., Phila., Pa.

Bakelite Corp., New York, N. Y.
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Cournand, E. L. Inc., New York, N. Y.
Dow Chemical Co., The, Midland, Mich.
Monsanto Chemical Co., Plastics Div., Springfield, Mass.
Price, M. B. Associates, New York, N. Y.

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American Cyanamid Co., Plastics Div., New York, N. Y. Bakelite Corp., New York, N. Y. Plaskon Co., Inc., Toledo, Ohio

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du Pont de Nemours, E. I. & Co., Inc., Wilmington, Del.

Monsanto Chemical Co., Plastics Div.,
Springfield, Mass. Carbide & Carbon Corp., New York,

POTTERY CONTAINERS

Floramics Co., The, Tampa, Fla Hull, A. E. Pottery Co., Crooksville, Ohio Na-Mac Products Corp., Los Angeles, Calif. Purinton Pottery Co., Wellesville, Ohio Robinson Clay Product Co., New York, Western Stoneware Co., Monmouth, Ill. Zanesville Stoneware Co., Zanesville, Ohio

PRESSES

PRINTING

(Aniline)

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Champlain Div., Interchemical Corp., New
York, N. Y.
Cottrell, C. B. & Sons Co., Claybourn Div., Milwaukee, Wis.

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PACKAGING CATALOG

Heinrich, H. H. Inc., New York, N. Y. Henschel, C. B. Mfg. Co., Milwaukee, Wis. Hudson-Sharp Machine Co., Green Bay,

Wis.
Kidder Press Co., Inc., Dover, N. H.
Marconetti, A. E. Inc., New York, N. Y.
Potdevin Machine Co., Bklyn, N. Y.
Rotogravure Engineering Co., East Boston,

Rutherford Machinery Co., Div. General Printing Ink Corp., New York, N. Y. Waldron, John Corp., New Brunswick, N. J.

PRINTING

(Letterpress)

Chambon, L. Corp., New York, N. Y. Chamblain Div., Interchemical Corp., New York, N. Y. Cottrell, C. B. & Sons Co., Claybourn Div., Milwaukee, Wis

Harris-Seybold-Potter Co., Dayton, Ohio Hudson-Sharp Machine Co., Green Bay,

Wis.
Kidder Press Co., Inc., Dover, N. H.
Markem Machine Co., Keene, N. H.
Meisel Press Mfg. Co., Boston, Mass.
Miehle Printing Press Mfg. Co., Chicago,

Miller Printing Machy. Co., Pittsburgh, Pa.
Potdevin Machine Co., Bklyn, N. Y.
Rutherford Machinery Co., Div. General
Ptg. Ink Corp., New York, N. Y.
Stokes & Smith Co., Philadelphia, Pa.

PRINTING

(Lithographic)

Harris-Seybold Potter Co., Dayton, Ohio Hoe, R. & Co., Inc., New York, N. Y.
Kidder Press Co., Inc., Dover, N. H.
Meisel Press Mfg. Co., Boston, Mass.
Miehle Printing Press Mfg. Co., Chicago, Ill. Rutherford Machinery Co., Div. Gen. Ptg. Ink Corp., New York, N. Y. Webendorfer-Wills Co., Div. American Type Founders Sales Corp., Mt. Vernon, N. Y.

PRINTING

(Raised)

Chambon, L. Coro., New York, N. Y. Meisel Press Mfg. Co., Boston, Mass. Wood, Nathan & Virkus Co., Inc., New York, N. Y

PRINTING

(Rotogravure)

Chambon, L. Corp., New York, N. Y.
Champlain Div., Interchemical Corp., New
York, N. Y.
Cottrell, C. B. & Sons Co., Claybourn Div., Cottrell, C. B. & Sons Co., Claybourn Div., Milwaukee, Wis.
Gravure Laboratories, Inc., Babylon, N. Y. Goss Printing Press Co., Chicago, Ill.
Harris-Seybold-Potter Co., Dayton, Ohio
Hoe, R. & Co., New York, N. Y.
Hudson-Sharp Machine Co., Green Bay, Wis.

Wis.
Kidder Press Co., Inc., Dover, N. H.
Marconetti, A. E., Inc., New York, N. Y.
Meisel Press Mfg. Co., Boston, Mass.
Potdevin Machine Co., Bklyn, N. Y. Rotogravure Engineering Co., East Boston,

Waldron, John Corp., New Brunswick, N. J.

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Stark Bros. Ribbon Corn., New York, N. Y. W-E-R Ribbon Corp., New York, N. Y.

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Century Ribbon Mills, New York, N. Y.
Du-Tone Ribbon Corp., New York, N. Y.
Fibre Cord Co., New York, N. Y.
Freydberg Bros.-Strauss, Inc., New York, N. Y.
General Ribbon Mills, Catasauqua, Pa.
Ketcham, Howard Inc., New York, N. Y.
Stark Bros. Ribbon Co., New York, N. Y.
Welwood, John C. Corp., New York, N. Y.
W-E-R Ribbon Corp., New York, N. Y.
Wright, Wm. E. & Sons Co., West Warren,
Mass.

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Milprint, Inc., Milwaukee, Wis.
Shellmar Products Co., Mt. Vernon, Ohio
Stark Bros. Ribbon Corp., New York, N. Y.
Tensolite Corp., The, N. Tarrytown, N. Y.
W-E-R Ribbon Corp., New York, N. Y.

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Western Union Telegraph Co.

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Consolidated Packaging Machinery Corp.,
Buffalo, N. Y.
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Merrick Scale Mfg. Co., Passaic, N. J.
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Mass. Toledo Scale Co., Phila., Pa.
Toledo Scale Co., Toledo, Ohio
Triangie Package Machinery Co., Chicago,

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N. H. Rexford Paper Co., Milwaukee, Wis. Reyburn Mfg. Co., Inc., The, Phila., Pa.

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Jones & Laughlin Steel Corp., Pittsburgh, Pa.

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Armstrong Cork Co., Lancaster, Pa.

du Pont de Nemours, E. I. & Co., Inc., Wilmington, Del.
Sylvania Industrial Corp., New York, N. Y.

CELLULOSE ACETATE

American Products Mfg. Co., New Orleans,

Celanese Celluloid Corp., New York, N. Y. Cournand, E. L. Inc., New York, N. Y. du Pont de Nemours, E. I. & Co., Inc., Wilmington, Del.

Eastman Kodak Co., Rochester, N. Y.

Monsanto Chemical Co., Plastics Div.,

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Athol Paper Box Co., Athol, Mass.
Atlanta Box Factory, Atlanta, Ga.
Atlantic Paper Box Co., Boston, Mass.
Autokraft Box Co., Hanover, Pa.
Babcock Box Co., Attleboro, Mass.
Barger Box Co., Inc., Elkhart, Ind.
Bisler, G. A. Inc., Phila., Pa.
Box Novelties, Inc., New York, N. Y.
Box Shop, Inc., New Haven, Conn.
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Buedingen, Wm. & Son, Rochester, N. Y.
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Casco Paper Box Co., Inc., Portland, Me. Cellulose Packaging Corp., New York,

Central States Paper & Bag Co., Inc., St. Louis, Mo.
Clark, Geo. V. Co., Inc., Long Island City,
N. Y.

N. Y.
Cleveland Container Corp., Cleveland, Ohio
Clover Paper & Transparent Boxes, Inc.,
Long Island City, N. Y.
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Craftsman Label Co., New York, N. Y.
Crook Paper Box Co., Kansas City, Mo.
Dennison Mfg. Co., Framingham, Mass.
Design Center, New York, N. Y.
Diamond Press, Inc., The, Display-rite
Div., New York, N. Y.
Dickerman Box Co., Cambridge, Mass.
Dorfman, A. & Co., Inc., New York, N. Y.
Earlville Paper Box Co., Earlville, N. Y.
Eggerss O'Flyng Co., Omaha, Nebr.

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York, N. Y. Everett Transparent Container Co., New

York, N. Y. Fairchild, E. E. Corp., Rochester, N. Y. Fleishhacker Paper Box Co., San Francisco, Calif.

Flower City Specialty Co., Rochester, N. Y.
Forbes Lithograph Co., The, Boston, Mass.
Friend Box Co., Danvers, Mass.
Frost Box Co., Inc., Pawtucket, R. I.
Gemloid Corporation, Long Island City,

N. Y.
Glove Paper Box Co., Chicago, Ill.
Hampshire Paper Box Co., Florence, Mass.
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Hollywood Paper Box Corp., Hollywood, Calif.

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Humitube Mfg. Co., Peoria, Ill.
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Lebanon Paper Roy, Co., Lebanon, Paper
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Lebanon Paper Box Co., Lebanon, Pa. Leominster Paper Box Co., Leominster,

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Meyer, Frank C. Co., Bklyn, N. Y.
Meyer, Jos. H. Bros., Bklyn, N. Y.
Miller, Walter P. Co., Inc., Phila., Pa.
Nashua Gummed & Coated Paper Co., Nashua, N. H. National Transparent Box Co., Springfield, Mass. Mass.

Neostyle, Inc., Chicago, Ill.

Nicoll & Co., San Francisco, Calif.

Offset Gravure Corp., Long Island City,
N. Y.

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Plumly, Geo. W. Co., Phila., Pa.
Price, M. B. Associates, New York, N. Y.
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Robinson, A. E. & Co., Chicago, Ill.
Rotogravure Engineering Co., E. Bostor Rotogravure Engineering Co., E. Boston, Royal Paper Corp., New York, N. Y. Schleicher, F. J. Paper Box Co., St. Louis, Schulz, A. Geo. Co., Milwaukee, Wis. Schunack, C. E. Inc., Meriden, Conn. Schwartz, H. L. & Sons Mfg. Co., Benton Harbor, Mich. Seaman Box Co., Inc., New York, N. Y Shaw Paper Box Co., Mer, New York, N. Y.
Shaw Paper Box Co., Meriden, Conn.
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Siegel, A. L. Co., Inc., Newark, N. J.
Sillcocks-Miller Co., The, South Orange, N. J.
Stecker Paper Box Co., Detroit, Mich.
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Taylor Box Co., Providence, R. I.
Tower Envelope Co., New York, N. Y.
Transparent Specialties Corp., Cleveland, Transparent Specialties Corp., Cleveland, Ohio
Union Specialty Co., Plainfield, N. J.
U. S. Envelope Co., Springfield, Mass.
U. S. Finishing & Mfg. Co., Chicago, Ill.
Walco Plastics, E. Orange, N. J.
Wallace Paper Box Corp., New York, N. Y.
Warneke Paper Box Co., Denver, Colo.
Warner Bros. Co., The, Bridgeport, Conn.
Waterbury Paper Box Co., Inc., Waterbury, Conn.

Weinman Bros., Chicago, Ill. Weilliams Bros., Chicago, In.
Williams Bros., St. Joseph, Mich.
Young, Douglas Inc., Pawtucket, R. I.
Young, Everett Co., Providence, R. I.
Zumbiel, C. W. Co., Cincinnati, Ohio

CONVERTERS OF TRANSPARENT FILM

American Paper Goods Co., The, Kensington, Conn.
Andrews, P. L. Corp., Bklyn, N. Y.
Arvey Corp., Chicago, Ill.
Cellulose Packaging Corp., New York, N. Y.
Comet Envelope & Paper Co., Inc., New
York, N. Y. Comet Envelope & Paper Co., Inc., New York, N. Y.
Crystal Transparent Mfg. Co., Inc., New York, N. Y.
Crystal Tube Mfg. Co., Chicago, Ill.
Cupples-Hesse Corp., St. Louis, Mo.
Daniels Mfg. Co., Rhinelander, Wis.
Diamond Press Inc., The, Display-Rite Div., New York, N. Y.
Dobeckmun Co., The, Cleveland, Ohio Forbes Lithograph Co., The, Boston, Mass.
Freydberg Bros.-Strauss, Inc., New York, N. Y. General Laminating, Inc., New York, N. Y. Holyoke Card & Paper Co., Springfield, Ivers-Lee Co., Newark, N. J. Marvellum Co., The, Holyoke, Mass.

Mason Envelope Co., New York, N. Y. Menasha Products Co., The, Menasha, Milprint, Inc., Milwaukee, Wis. Mor-Gan Laminating & Foliating Co., New

York, N. Y.

Munson Bag Co., The, Cleveland, Ohio
National Transparent Box Co., Springfield,

Neostyle Inc., Chicago, Ill. Nicoll & Co., San Francisco, Calif. Paramount Paper Products Co. Inc., Phila.,

Plastics Finishing Corp., Bklyn, N. Y.
Print-A-Tube Co., Passaic, N. J.
Rotogravure Engineering Co., E. Boston,
Mass.

Mass.
Royal Paper Corp., New Yo. g., N. Y.
Royal, Thomas M. & Co., Phila., Pa.
Shellmar Products Co., Mt. Vernon, Oh
Tensolite Corp., The, N. Tarrytown, N. Y.
Tower Envelope Co., New York, N. Y.
U. S. Envelope Co., Springfield, Mass.

ETHYL CELLULOSE

American Prods. Mfg. Co., New Orleans, La. Dow Chemical Co., The, Midland, Mich.

Rhinelander Paper Co., Rhinelander, Wis. Riegel Paper Corp., New York, N. Y.

LATEX FOR WRAPPING FROZEN FOODS Dewey & Almy Chemical Co., Cambridge B., Mass.

RUBBER HYDROCHLORIDE

American Products Mfg. Co., New Orleans, La.
Dispersions Process, Inc., New York, N. Y.
du Pont de Nemours, E. I. & Co., Inc., Wilmington, Del.
Goodyear Tire & Rubber Co., The, Pliofilm
Div., Akron, Ohio

VINYL ACETATE

Union Carbide & Carbon Corp., New York, N. Y.

TUBE CLIPS

Colton, Arthur Co., Detroit, Mich.
Standard Specialty & Tube Co., New Brighton, Pa.

TUBES

CELLULOSE

See Vials, Cellulose

COLLAPSIBLE

(Aluminum, Lead, Tin & Alloys)

Aluminum Co. of America, Pittsburgh, Pa. National Collapsible Tube Co., Providence, New England Collapsible Tube Co., Chi-cago, Ill. Peerless Tube Co., Bloomfield, N. J.

Standard Specialty & Tube Co., New Brighton, Pa. Sun Tube Corp., Hillside, N. J. Turner White Metal Co., Inc., New Bruns-wick, N. J.

Victor Metal Products Corp., Bklyn, N. Y. White Metal Mfg. Co., Hoboken, N. J. Wirz, A. H. Inc., Chester, Pa.

TUBING, GLASS

See Glass, Rod & Tubing

TUMBLERS

(Glass)

Anchor Hocking Glass Corp., Lancaster, Ohio Corning Glass Works, Corning, N. Y.
Hazel-Atlas Glass Co., Wheeling, W. Va.
Libby Glass Mfg. Co., Toledo, Ohio
Owens-Illinois Glass Co., Toledo, Ohio
Owens-Illinois Pacific Coast Co., San Francisco, Calif. Tygart Valley Glass Co., Washington, Pa.

VARNISHES & LACQUERS

See Coatings, Protective

VIALS

CELLULOSE

Celluplastic Corporation, Newark, N. J. Lusteroid Container Co., Inc., S. Orange, N. J.

GLASS

Cournand, E. L. Inc., New York, N. Y. Glass Industries, Inc., New York, N. Y. Hazel-Atlas Glass Co., Wheeling, W. Va. Kimble Glass Co., Vineland, N. J. Owens-Illinois Glass Co., Toledo, Ohio Owens-Illinois Pacific Coast Co., San Francisco Calif cisco, Calif. Pennsylvania Glass Products Co., Pittsburgh, Pa.

Price, M. B. Associates, New York, N. Y.
Wheaton, T. C. Co., Millville, N. J.

American Aluminum Ware Co., Newark, N. J.
Clark Mfg. Co., J. L., Rockford, Ill.
Sun Tube Corp., Hillside, N. J.
Victor Metal Products Corp., Bklyn, N. Y.

WADDING

See Padding & Wadding

WIRE

REINFORCEMENT

Acme Steel Co., Chicago, Ill. Bethlehem Steel Co., Bethlehem, Pa. Gerrard Co., Inc., The, Chicago, Ill. Jones & Laughlin Steel Corp., Pittsburgh, Pa.

STAPLING

Acme Staple Co., Camden, N. J.
Acme Steel Co., Chicago, Ill.
Bates Mfg. Co., The, New York, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Bostitch, Inc., East Greenwich, R. I.
Heller Co., The, Cleveland, Ohio Jones & Laughlin Steel Corp., Pittsburgh, Paslode Co., Chicago, Ill. Prentiss, George W. & Co., Holyoke, Mass.

Acme Steel Co., Chicago, Ill,
Bethlehem Steel Co., Bethlehem, Pa.
Bostitch, Inc., E. Greenwich, R. I.
Dexter Folder Co., New York, N. Y.
Harris-Seybold-Potter Co., Dayton, Ohio
Heller Co., The, Cleveland, Ohio
Ideal Stitcher & Mfg. Co., Racine, Wis.
Jones & Laughlin Steel Corp., Pittsburgh,
Pa. Paslode Co., Chicago, Ill. Prentiss, George W. & Co., Holyoke, Mass.

STITCHING, COLORED

Acme Steel Co., Chicago, Ill. Bostitch, Inc., E. Greenwich, R. I. Harris-Seybold-Potter Co., Dayton, Ohio

DIRECTORY OF TRADE NAMES

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS	TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Abk Accent	Plastic floor truck wheels Manicure sets	The Rapids Standard Co., Inc., Grand Rapids, Mich. The Henkel Co., Fremont, O.	Anilink	Aniline ink, dye or pig- mented type	Rotogravure Div., General Printing Ink Corp New York, N. Y.
Ace	Steel strapping tightener	Stanley Works, New Britain, Conn.	Anilink Kleensolve	Solvent, cleaning, for knurled rollers	Rotogravure Div., General Printing Ink Corp., New York, N. Y.
Acetate Face	and glassine back	Mason Envelope Co., New York, N. Y.	Apex	Steel strapping	Signode Steel Strapping Co.,
Ace-Tra ACJ	One-piece capsule metal tray Adhesives, starch derived	Ace Carton Corp., Cicero, III. Stein, Hall Mfg. Co., Chicago, III.	Aqualeen	Transparent cake wraps	Chicago, III. Newark Paraffine & Parchmen
A.C.M.	Box board, folding and dis- play containers	American Coating Mills, Inc., Elkhart, Ind.	Aquapearl Aqua-Seal	Cast phenolic pearl shades Moisture resistant boxboard	Paper Co., Newark, N. J. Catalin Corp., New York, N. Y The Ohio Boxboard Co., Ritt
\cme	Machines	Acme Staple Co., Camden. N. J. Sigmund Ullman Co., Div.	Arabol	Adhesive	man, O. Arabol Mfg. Co., New York
Adament	Printing ink	General Printing Ink Corp., Bronx, N. Y.	Araflex	Adhesive	N. Y. Arabol Mfg. Co., New York
Addoweight	Automatic indicating, totaliz- ing and counting scale	Merrick Scale Mfg. Co., Pas- saic, N. J.	Aratex	Adhesive	N. Y. Arabol Mfg. Co., New York
Aeromatic	Automatic scales	Consolidated Packaging Ma- chinery Corp., Buffalo, N. Y.	Arenco	Packaging machines	N. Y. Arenco Machine Co., Inc.
Agate Dipping	For chocolate coating	Matthias Paper Corp., Phila- delphia, Pa.	Argent Silver Print	Box covering paper	New York, N. Y. Chas. W. Williams & Co., Inc.
Aico	Composition, cold molded	American Insulator Corp., New Freedom, Pa.	Argette	Box paper	New York, N. Y. Kupfer Bros. Co., New York
Air-Flo	Bottle cleaning and filling machine		Aristo	Confectionery bags	N. Y. American Paper Goods Co.
Air Line	Jar cleaning machine	Karl Kiefer Machine Co., Cin- cinnati, O.	Aristocrat	Folding paper boxes	Kensington, Conn. Edwin J. Schoettle Co., Phila.
Air-O-Seal	Cellophane covered coffee	Thomas M. Royal & Co., Phila., Pa.	Aristocrat	Wax-lined food tray	Pa. Sutherland Paper Co., Kalama
Ajex Gleze	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Aristokraft	Cellophane garment bags	zoo, Mich. Central States Paper & Bag Co
Alcoa	Aluminum Company of America products	Aluminum Company of Amer- ica, Pittsburgh, Pa.	Artboxtone	Box covering paper	St. Louis, Mo. Chas. W. Williams & Co., Inc.
Allegheny	Stainless steel	Allegheny Ludlum Steel Corp., Pittsburgh, Pa.	Artcote	Pyroxylin metallic coated	New York, N. Y. Artcote Papers, Inc., Irvingto
Allison Allure	Bag closing machine Embossed mica paper	B. F. Gump Co., Chicago, III. Hazen Paper Co., Holyoke,	Art-Craft	papers Fancy embossed paper	N. J. Springfield Coated Paper
All-Weather	Weatherproofed displays for	Mass.	Artex	Leather substitute paper	Corp., Camden, N. J. Bradner Smith & Co., Chicago
All-Weather	outdoor use Water resistant kraft	Inc., Milwaukee, Wis. Bagpak, Inc., New York, N. Y.	Art Finished Pastels	Box covering paper	III. Chas. W. Williams & Co., Inc
Alseco	Aluminum Seal Co. products	Aluminum Seal Co., New Ken- sington, Pa.	Art Floral	Brightwood kid finish papers	New York, N. Y.
Alter-Proof	Tear-off band tamperproof	Aluminum Seal Co., New Ken- sington, Pa.	Art Gingham		Springfield, Mass. Holyoke Card & Paper Co
Alvac	Vacuum tumbler closure	Aluminum Seal Co., New Ken- sington, Pa.	Artillery		Springfield, Mass.
Amekine	Synthetic rubber dropper nipples	Pennsylvania Glass Products Co., Pittsburgh, Pa.		Box cover	District of Columbia Pap Mills Inc., Washington, D.C Armstrong Cork Co., Lancaste
American	Paper, box lace	American Lace Paper Co., Mil- waukee, Wis.	Artmold	Molded plastic caps	Pa.
American Beauty	Box cover paper	C. R. Whiting Co., Inc., Hack-	Art Pastels	Box covering paper	Chas. W. Williams & Co., Inc. New York, N. Y.
American Prints	Fancy printed, patriotic	ensack, N. J. Louis Dejonge & Co., New York, N. Y.	Ashmaster	Ash tray	Owens-Illinois Glass Co., To ledo, O.
Amerine	Composition, cold molded	American Insulator Corp., New	Asphaltite	Board impregnated with odorless asphaltum	National Container Corp Long Island City, N. Y.
Amerold	Casein	Freedom, Pa. American Plastics Corp., New York, N. Y.	Athos	Cover paper	United Mfg. Co., Springfiel Mass.
Amerseal	Lug caps	Anchor Hocking Glass Corp., Lancaster, O.	Atlasol	Pastes and glues	Atlas Gum & Sizing Co., Ne York, N. Y.
Amerseal	Special pouring spout with		Aulcoid	Industrial finishes	Ault & Wiborg Corp., Ne York, N. Y.
Amkleer	screw cap closure Cellophane bags	American Paper Goods Co.,	Aulfex	Industrial finishes	Ault & Wiborg Corp., Ne York, N. Y.
Ampeco	Cellophane envelopes Paper mailing boxes	Kensington, Conn. H. Fleisig Inc., New York, N. Y	Aulsper	Industrial finishes	Ault & Wiborg Corp., Ne York, N. Y.
Amphenol	Transparent sheet, rod and tube	American Phenolic Corp., Chi- cago, III.	Aultone	Industrial finishes	Ault & Wiborg Corp., Ne
Amprinko	Printing inks	American Printing Ink Co., Div. General Printing Ink Corp.,	Autoclench	Stapler	York, N. Y. Bostitch, Inc., East Greenwic R. I.
Amsco	Bag sealer	Chicago, III. Amsco Packaging Machinery	Autokrat	Collapsible paper boxes	Edwin J. Schoettle Co., Phil Pa.
Amyloid	Coated starch sheeting	Co., L. I. C., N. Y. American Products Mfg. Co.,			ru.
Anchor	Metal and molded closures, sealing machines, process-	New Orleans, La. Anchor Hocking Glass Corp., Lancaster, O.	Baby Bunting	Nursery sets	Owens-Illinois Glass Co., T
Anchor	ing equipment Steel strapping	Signode Steel Strapping Co.,	Babytone	Box covering paper	ledo, O. Chas. W. Williams & Co., In
		Chicago, III.	Bagpak	Multi-wall paper bag filling	New York, N. Y. Consolidated Packaging M
Anchor Hocking	Glass tumblers, jars and bot- tles, metal and molded closures, sealing machines and pressure processing	Lancaster, O.	Bagpakers	and closing equipment Bag filling and closing ma- chinery	chinery Corp., Bultalo, N.
Androck	equipment	Washburn Co. Pashford III	Bakelite	Acetate, phenolic, polysty- rene, urea, molding mate-	Bakelite Corp., New Yor N. Y.
Androck	Wire display fixtures, floor and counter types		Polluka -	rials, also cast resins	
Angle-Loc	Folding box for baked goods	The Ohio Boxboard Co., Ritt- man, O.	Ballyhoo	Box covering paper	Chas. W. Williams & Co., In New York, N. Y.

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS	TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Bandbox Stripes	Printed papers, fancy	Louis Dejonge & Co., New	Britecote	Paper stock	Brooks Bank Note Co., Spring
Barkstone	Imitation cork box covers	York, N. Y. District of Columbia Paper	Broadside	Folding carton	field, Mass. Robert Gair Co., Inc., Nev
Bar-Nun	Bag feeders, openers and	Mills Inc., Washington, D.C. B. F. Gump Co., Chicago, III.	Brocade	Printed embossed paper	York, N. Y. Hampden Glazed Paper 8
Bar-Nun Auto Check Barque	weighers Automatic net weighers Print box paper	B. F. Gump Co., Chicago, III. The Marvellum Co., Holyoke,	Broken Back	Patented display container	Card Co., Holyoke, Mass. Brooks Bank Note Co., Spring field, Mass.
Barr-Kap	Bar use caps	Mass. Aluminum Seal Co., New Ken-	Bronzart	Counter and window dis- plays and point of sale ma-	Bronzart Metals Co., Nev York, N. Y.
larroll Nozzie	Special nozzle with screw	sington, Pa.	Bronzoid	terial Embossed signs	Chaspec Mfg. Co., New York
las Relief	closure Gold and silver topped em-	Continental Can Co., New York, N. Y. Hampden Glazed Paper &			N. Y.
B" Brand	bossed paper	Card Co., Holyoke, Mass. National Can Corp., New York, N. Y.	Brooks Twin Bruno	Double unit display container Semi-automatic can filling ma-	Brooks Bank Note Co., Spring field, Mass. The Vol-U-Meter Co., Buffalo
Beacon	Inturned lug caps	Anchor Hocking Glass Corp., Lancaster, O.	Brunswick	chine Paper for box coverings	N. Y. Pejepscot Paper Co., Nev
Beauty Kit	Travel kit	Colt's Patent Fire Arms Mfg.	Homespuns Buckskin	Kraft lined boxes	York, N. Y. Morris Paper Mills, Chicago
Beau Tye	Decorative tying ribbon made	Co., Hartford, Conn. Freydberg BrosStrauss, Inc.,	Bulkbinding	Steel strapping	III. Signode Steel Strapping Co.
Redford Cord	of cotton Embossed mica paper	New York, N. Y. Hazen Paper Co., Holyoke,			Chicago, III.
feetle	Urea-formaldehyde plastic	Mass. American Cyanamid Co., Plas- tics Div., New York, N. Y.	Burlabox	Tying machines Export water resistant containers	B. H. Bunn Co., Chicago, III. National Container Corp. Lon; Island City, N. Y.
lells and Stars	Fancy paper	Louis Dejonge & Co., New York, N. Y.	Burt	Labeling and case packing machines	Burt Machine Co., Baltimore Md.
iendell Ben Mont	Attachment for steel rule bender Gift wrappings, tissues, glas-	J. F. Helmold & Bro., Inc., Chicago, III. Ben Mont Papers, Inc., Ben-			
	sine bags, shredded waxed papers	nington, Vt.	CaD	Junior case printer	Ideal Stitcher & Mfg. Co., Ra- cine, Wis.
Ben Mont Master- craft	Gift wrappings, tissues, glas- sine bags, shredded waxed papers	Ben Mont Papers, Inc., Ben- nington, Vt.	Camechine Camel Brand	Slitting, winding and laminat- ing machines Corrugated containers	Cameron Machine Co., Bklyn N. Y. The Ashtabula Corrugated Bo
Bergmann	Conveyor switches Ice cream fillers	Horix Mfg. Co., Pittsburgh (4), Pa.	Cameo-Cut	Cut out letters, ornament sig-	Co., Ashtabula, O.
Bethcolite	Tin plate	Bethlehem Steel Co., Bethle- hem, Pa.		natures	Cameo Die & Label Co., Nev York, N. Y.
lig Chief	Glass bottles	Owens-Illinois Glass Co., To- ledo, O.	Cameoflex	Iridescent label printing proc-	Cameo Die & Label Co., Nev York, N. Y.
lirch	Box cover	District of Columbia Paper Mills Inc., Washington, D. C.	Cameo-Shine	Substitute for aluminum foil	York, N. Y.
irchette	Box paper	Kupfer Bros. Co., New York,	Cameron	Can making machinery	Cameron Can Machinery Co. Chicago, III.
lackbird Embossed	Box covering paper	N. Y. Chas. W. Williams & Co., Inc.,	Camlet	Two-tone embossed paper	Springfield Coated Paper Corp., Camden, N. J.
Hacktone	Pr nting ink	New York, N. Y. Sigmund Ullman Co., Div. General Printing Ink Corp.,	Canco Candy Stripes	Miscellaneous tin cans and containers Fancy paper	American Can Co., New York N. Y. Louis Dejonge & Co., New
lanchette	Box paper	Bronx, N. Y. Kupfer Bros. Co., New York,			York, N. Y.
liss	Wire stitchers	N. Y. Dexter Folder Co., New York,	Canno	Belt conveyor	Karl Kiefer Machine Co., Cin cinnati, O.
liss	Solid fibre shipping containers	N. Y. Robert Gair Co., Inc., New	Cenves	Embossed mica paper	Hazen Paper Co., Holyoke Mass.
lock Board	Heavy pressed board signs	York, N. Y. Chaspec Mfg. Co., New York, N. Y.	CaPeM Captive Cap	Screw capping machines Collapsible tube	Consolidated Packaging Machinery Corp., Buffalo, N. Y National Collapsible Tube Co.
lossomtime	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Carbofilm	Coated wood gum sheeting	Providence, R. I. American Products Mfg. Co.
Blu-Kore Blum	Gummed cloth tape Testing machines	The Gummed Products Co., Troy, O. The LaBoiteaux Co., Inc., Cin-	Carnival	Embossed foil box papers	New Orleans, La. Hazen Paper Co., Holyoke Mass.
	Gross weighing and filling	cinnati, O.	Carpenter	Fibre drums	Carpenter Container Co., Inc. Bklyn., N. Y.
lond lond-Crowns	machines	U. S. Automatic Box Machin- ery Co., Inc., Roslindale, Boston, Mass.	Carry-Safe	Egg carton	Self-Locking Carton Co., Chi cago, III.
	Crowns for beverage bottles and cans	mington, Del.	Caseal	Closure	Owens-Illinois Glass Co., To ledo, O.
oosters	Portable belt conveyors	The Rapids Standard Co., Inc., Grand Rapids, Mich.	Catabond	Phenolic laminating	Catalin Corp., New York N. Y.
o-Seals	Pre-tied, cellulose bows	Stark Bros. Ribbon Corp., New York, N. Y.	Catalin	Cast phenolic plastic	Catalin Corp., New York N. Y.
ostitch	Wire staples, staplers, stitch- ers, tackers	Bostitch Inc., E. Greenwich, R. I.	Catavar	Phenolic surface coating	Catalin Corp., New York N. Y.
oston	Wire stitchers	Dexter Folder Co., New York, N. Y.	ccs	Crown corks	Crown Cork & Seal Co., Balti more, Md.
ouquet	Fancy paper	Louis Dejonge & Co., New York, N. Y.	Ceco	Carton and container sealing machines	Container Equipment Corp Newark, N. J.
oxcrafters	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Cedar	Woodgrain box papers	Hazen Paper Co., Holyoke Mass.
rad-Tite razilian Bright	Specialty wrappers for bread and food Nature papers	Dixie Wax Paper Co., Inc., Dallas, Texas Bradner Smith & Co., Chicago,	Celate	Opaque, transparent, and translucent cellulose acetate in colors	E. L. Cournand, Inc., New York, N. Y.
	Roll leaf	III.	Cello	Cellophane ribbon	Freydberg BrosStrauss, Inc New York, N. Y.
righten Leaf		Walsh, Inc., New York, N. Y.	Cello-Face	Bag with cellophane front and glassine back	Mason Envelope Co., New York, N. Y.
right Spots	Fancy paper	Louis Dejonge & Co., New York, N. Y.	Cellophane	Transparent cellulose sheet- ing	E. I. du Pont de Nemours Co., Inc., Wilmington, Del.
rightwood	Box covering paper	Holyoke Card & Paper Co., Springfield, Mass.	Cellophane	Transparent cellulose sheet-	Sylvania Industrial Corp., Nev
Brightwood	Paper box making machine	U. S. Automatic Box Machinery Co., Inc., Roslindale, Boston, Mass.	Cello-Safe Cellosheen	Cellophane lollypop sticks	Fibre Cord Co., New Yorl N. Y. Deerfield Glassine Co., Mor
Brightwood Cameo	Box cover paper	Holyoke Card & Paper Co.,		Super-transparent glassine	roe Bridge, Mass.
Brightwood Poly- chrome	Box covering paper	Springfield, Mass. Holyoke Card & Paper Co., Springfield, Mass.	Cellucolor Cellu-Gums	Wrappers Adhesives for gluing trans-	Shellmar Products Co., M Vernon, Ohio National Adhesives, Div. No.
Brightwood Sateens	Box covering paper	Holyoke Card & Paper Co., Springfield, Mass.		parent sheeting	tional Starch Products, Inc New York, N. Y.
Brilliant Metallics	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Cellulin	Wrappers	Shellmar Products Co., M Vernon, Ohio

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS	TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Celluloid	Cellulose nitrate (pyroxylin)	Celanese Celluloid Corp.,	Coach and Four	Fancy paper	Louis Dejonge & Co., New
Cell-U-Print	Varnished bags	New York, N. Y. Thomas M. Royal & Co.,	Coated Lithwite	Coated box board	York, N. Y. The Gardner-Richardson Co.,
Cellusuede	Flock paper	Phila., Pa. Stevens-Nelson Paper Corp., New York, N. Y.	Code-O-Matic	For code or control number	Middletown, O. New Jersey Machine Corp.,
Cellusuede	Velour paper	Cellusuede Products, Inc.,	Collofilm	Adhesive	Hoboken, N. J. Stein, Hall Mfg. Co., Chicago,
Celolustre	Box coating	Rockford, III. National Metal Edge Box Co.,	Colodense	Wrappers	Shellmar Products Co., Mt.
Celonite	Cellulose nitrate plastic sheet-	Phila., Pa. Monsanto Chemical Co., Plas-	Colorama	Pyroxylin coated metallic	Vernon, O. Hazen Paper Co., Holyoke,
Celons	ing Secondary bottle closures	tics Div., Springfield, Mass. Celon Co., Madison, Wis.	Colorettes	Printed cellophane flower	Mass. The Dobeckmun Co., Cleve- land, O.
Cel-O-Seal	Cellulose caps and bands	Armstrong Cork Co., Lancaster	Colorfilm	Cellulose laminated coated	The Dobeckmun Co., Cleve- land, O.
		E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.	Colorgraphic	Transparent signs and calen- dars	The U. S. Printing & Litho. Co. Cincinnati, O.
Celoshine	Waxed glassine bags with window	Dixie Wax Paper Co., Inc., Dal las, Tex.	Coloroid	Applied finishes to bottles and jars	Coloroid Co., Inc., Cleveland,
Celowax	Waxed sulphite	Riegel Paper Corp., New York N. Y.	Coloroid	Applied colors to jars and bottles	Double Duty Products, Inc., Cleveland, O.
Cel-Spar	Box covering papers	Paper City Mfg. Co., Inc., Holyoke, Mass.	Color-Pak	Colored shipping containers and floor displays	The U. S. Corrugated-Fiber Box Co., Indianapolis, Ind.
Cem	Bottling machinery	The Crown Cork & Seal Co., Baltimore, Md.	Colorstitch	Colored stapling and stitch- ing wire	Acme Steel Co., Chicago, III.
Cemac	Bottling machinery	The Crown Cork & Seal Co., Baltimore, Md.	Col-O-Tex	Imitation or artificial leather	Columbus Coated Fabrica Corp., Columbus, O.
Cemco	Bottling machinery	The Crown Cork & Seal Co., Baltimore, Md.	Colr-Tye	Cotton tips	Fibre Cord Co., New York N. Y.
Century	Carton gluer	E. G. Staude Mfg. Co., St. Paul, Minn.	Colt Air	Insulated containers	Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.
Certified	Paper doilies	U. S. Lace Paper Works, Inc., Bklyn, N. Y.	Coltjems	Semi-precious stones (plas-	Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.
Challenger	Cellulose window gluing machine		Coltrock	tics) Phenol formaldehyde mold-	Colt's Patent Fire Arms Mfg Co., Hartford, Conn.
Challis Print	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Coltwood	ing compound Phenol material	Colt's Patent Fire Arms Mfg
Chambon	Typographic printing presses	Champlain Div., Interchemical Corp., New York, N. Y.	Columbus		Co., Hartford, Conn. The Exact Weight Scale Co.
Chameleon	Leatherette paper	Springfield Coated Paper Corp., Camden, N. J.	Comet	scales Sealing tapes	Columbus, Ohio McLaurin-Jones Co., Brook
Champion	Envelope mfg. machine	F. L. Smith Machine Co., Inc , New York, N. Y.	Comet	Box stays Out-folding carton gluer	field, Mass. E. G. Staude Mfg. Co., St
Champion	Adjustable shell making ma- chine	E. G. Staude Mfg. Co., St. Paul, Minn.	Common Sense	Jars and bottles	Paul, Minn. Owens-Illinois Glass Co., To
Champlain		Champlain Div., Interchemical	Complete Satintone	Box covering paper	ledo, O. Chas. W. Williams & Co., Inc.
Chastik	Adhesive backing	Chaspec Mfg. Co., Inc., New York, N. Y.	Complimentary Print	Box covering paper	New York, N. Y. Chas. W. Williams & Co., Inc.
Chatoye	Pyroxylin treated box papers	Plastic Coating Corp., Hol- yoke, Mass.	Concora	Linerboard and boxboard	New York, N. Y. Container Corp. of America
Check-Weigher	Automatic check-weighing scale	Merrick Scale Mfg. Co., Pas- saic, N. J.	Congo	Boxes and shipping cartons Casein metallic box papers	Chicago, III. Hazen Paper Co., Holyoke
Cheerio	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Conomee	Box cover paper	Mass. Matthias Paper Corp., Phila.
Chemco Lac	Quick drying varnish	Chemical Color & Supply Co., Div. General Printing Ink	Conservettes	Cellophane corsage contain-	Pa. The Dobeckmun Co., Cleve
Chemco Lightning	Ink compound	Corp., Chicago, III.	Consolidated	ers Textile bag closers	land, O. Consolidated Packaging Ma
Set Chemco Wax	Ink compound	Chemical Color & Supply Co., Div. General Printing Ink Corp., Chicago, III, Chemical Color & Supply Co., Div. General Printing Ink	Constant	Printing inks	chinery Corp., Buffalo, N. Y American Printing Ink Co., Div General Printing Ink Corp. Chicago, III.
Cheviot	Box covering paper	Corp., Chicago, III. Chas. W. Williams & Co., Inc.,	Container Slotter	Corrugated container slotter and creaser	E. G. Staude Mfg. Co., St Paul, Minn.
Chevron Print		New York, N. Y. Chas. W. Williams & Co., Inc.,	Conti-Chrome	Screenless color reproduc-	Continental Lithograph Corp. Cleveland, O.
Chick Pullman	Box covering paper Corrugated chick shipping	New York, N. Y. Inland Container Corp., In-	Conti-Glo	Fluorescent lithographed dis- plays	Continental Lithograph Corp Cleveland, O.
Chilton	containers	dianapolis, Ind.	Conti-Glo	Fluorescent lacquers and coatings	
Christmas Candle	Metal inlaying in plastics Fancy paper	Plastic Inlays, Inc., Summit, N. J. Louis Dejonge & Co., New	Conti-Glo Line	Ultraviolet assemblies	Continental Lithograph Corp Cleveland, O.
Christmas Ribbons	Fancy printed paper	York, N. Y. Louis Dejonge & Co., New	Continental Gloss	Glossed and embossed print- ing papers	Keller-Dorian Paper Co., Nev York, N. Y.
Cinati	Liquid bottling machine	York, N. Y. Karl Kiefer Machine Co., Cin-	Cord-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke Mass.
Cinati Junior	Liquid bottling machine	cinnati, O. Karl Kiefer Machine Co., Cin-	Cordurette	lmitation cloth paper	C. R. Whiting Co., Inc., Hack ensack, N. J.
Cin-Made	Fibre cans	cinnati, O. The Cin-Made Corp., Cincin-	Corkrusta	Imitation cork paper	C. R. Whiting Co., Inc., Hack ensack, N. J.
Circle "A"	Molded and metal caps and	nati, O. Armstrong Cork Co., Lancas-	Corktec	Imitation cork	Paper Affiliates Co., Inc., Nev York, N. Y.
Citrustrap	corks and glass containers Steel strapping	ter, Pa. Acme Steel Co., Chicago, III.	Cork-Tex	Cork liners for crowns	Bond Mfg. Corp., Inc., Wil mington, Del.
Clarophane	Window bag	Oneida Paper Products, Inc., New York, N. Y., also Continental Bag Specialties	Corrodek	Wrapping and sheeting ma- chines Colored corrugated liners	Miller Wrapping & Sealing Ma chine Co., Chicago, III.
Clearit	Asbestos	Scientific Filter Co., New York,	Corroflex	and trays Flexible corrugated for pack-	Newton Upper Falls, Mass Sherman Paper Products Co
Cleaneal	Heat sealing glassine	N. Y. Hartford City Paper Co., Hart-	Corru-Fibre	ing Printing inks	Newton Upper Falls, Mass J. M. Huber, Inc., New York
Clearseal	Thermoplastic coated acetate	ford City, Ind. General Laminating, Inc., New	Corruffex	Display packages	N. Y. Waldorf Paper Products Co
Cleanite	Odorless unbreakable con-	York, N. Y. Celluplastic Corp., Newark,	Conseal	Roll-on tamperproof over	St. Paul, Minn.
Clearview	tainers, tubes and vials Cellophane bags	N. J.	Cotacord	cork closure Decorative tying cord—plas-	sington, Pa.
Cleveco	Lined fibre can	Equitable Paper Bag Co., Inc., Long Island City, N. Y. Cleveland Container Co.,	Cottoniuxe	tic covered	New York, N. Y.
		Cleveland, Ohio		paper	York, N. Y.
Climex	Bottle wrappers	The Hinde & Dauch Paper Co., Sandusky, O.	Cottrell-Heinrich	Multi-color aniline printing presses	H. H. Heinrich, Inc., New York, N. Y.

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS	TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Counter Clerk	Counter merchandising dis-	Badger Merchandising Displays.	Diagonals	Box covering paper	Chas. W. Williams & Co., Inc
Cradle	plays Nursing bottles	Inc., Milwaukee, Wis. Owens-Illinois Glass Co., To-	Dignity Cheviot	Paper for box coverings	New York, N. Y. Pejepscot Paper Co., Nev
Crescent	Transparent waxed paper	ledo, O. Kalamazoo Vegetable Parch-	Disco	Imitation fabrics and wood	York, N. Y. District of Columbia Paper
resco	Printing Inks	ment Co., Kalamazoo, Mich. Crescent Ink & Color Co. of Pa., Phila., Pa.	Dispersite	grains Artificial dispersion of crude, reclaimed and synthetic	Mills Inc., Washington, D. O Dispersions Process, Inc., New York, N. Y.
restone	Aniline ink	Crescent Ink & Color Co. of Pa., Phila., Pa.	Display-O	rubbers Window bags	Thomas M. Royal & Co., Phile
rest-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke.	Displayologist	Designers	Pa. Everett Young Co., Providence
retan-Sheen	Embossed mica paper	Mass. Hazen Paper Co., Holyoke,			R. I.
retonne	Fancy box-covering papers	Mass. The Marvellum Co., Holyoke,	Dixie	Carton blanking machine	E. G. Staude Mfg. Co., Paul, Minn.
rille	Ties and decorative materials	Mass. The Tensolite Corp., N. Tarry-	Dixie Cups	Paper drinking cups and con- tainers	Dixie-Vortex Co., Easton, Pa
rinkle-Tie	Cotton tying materials	town, N. Y. Chicago Printed String Co.,	D-O-K	Waxed kraft paper	Kalamazoo Vegetable Paro ment Co., Kalamazoo, Mic
ripseal	Closure	Chicago, III. Owens-Illinois Glass Co., To-	Dolite	Cartons and boxes	The Dobeckmun Co., Cleviand, O.
ross-Stitch	Embossed mica paper	ledo, O. Hazen Paper Co., Holyoke,	Domino Sheen	Embossed mica paper	Hazen Paper Co., Holyol
		Mass.	Domore	Automatic processing ma-	Mass. Wood, Nathan & Virkus C
nwor	Closures, caps, cans Clay products	Crown Cork & Seal Co., Balti- more, Md. The Robinson Clay Products Co., New York, N. Y.	Doplex	Cellulose acetate laminated to pla n or p inted paper	Inc., New York, N. Y. The Dobeckmun Co., Cleviand, O.
ry-O-Vac	Protective wrap for frozen	Dewey & Almy Chemical Co.,	Doplex Brilliant	lamicated cartons Waterproof paper	The Dobeckmun Co., Cler
cryptic	foodstuffs Printing inks	Cambridge, B., Mass. Crescent Ink & Color Co. of Pa., Phila., Pa.	Dotted Swiss	Box papers	land, O. Hazen Paper Co., Holyol Mass.
rystal	Asbestos	Scientific Filter Co., New York, N. Y.	Doubledge	Cellophane wrapper with double thick ends	The Dobeckmun Co., Cleviand, O.
rystal	Coated box coverings	McLaurin-Jones Co., Brook- field, Mass.	Double Duty	Wire-handle paper pail (locktop)	Sutherland Paper Co., Kalan zoo, Mich.
rystallon	Mother-of-pearl box paper and cardboard	Riegel Paper Corp., New York, N. Y.	Double Plate	Filter	Karl Kiefer Machine Co., C cinnati, O
rystal-Pak rystalustre	Rigid cellulose containers	Transparent Specialties Mfg Co., Cleveland, O.	Doubleton	Printing inks	Sigmund Ullman Co., D General Printing Ink Cor Bronx, N. Y.
	Paper lacquer	Maas & Waldstein Co., New- ark, N. J.	Dowicides	Germicides-fungicides	The Dow Chemical Co., M
umberland	papers	S. D. Warren Co., Boston, Mass.	Drawlene	Industrial finishes	lang, Mich. Ault & Wiborg Corp., No.
uplette	Box paper	Kupfer Bros. Co., New York, N. Y.	Dripcut	Syrup dispensers	York N. Y. Na-Mac Products Corp., I
up-Peks ushion Stitch	Paper drinking cups Siftproof and moisture-proof bag closure	Dixie-Vortex Co., Easton, Pa. Bagpak, Inc., New York, N. Y.	Dri-Tape Drumpak	Heat-sealing Corrugated drums	Angeles, Calif. Seal, Inc., Shelton, Conn. Gaylord Container Corp.,
			Dry-Hesive	Masking tape	Gummed Tape & Devices C
lacro	Metal milk bottle caps,	Crown Cork & Seal Co., Bal-	Dubl-Cushion	Egg carton	Brooklyn, N. Y. Bloomer Bros. Co., News
	coverall	timore Md.	Dubl-Vu	Cartons, window	Wayne Co., N. Y. Rossotti Lithographing C
aka-Ware	Molded plastic containers, etc.	Harry Davies Molding Co., Chicago, III.	Dukutone	Box covering paper	Inc., No. Bergen, N. J. Chas. W. Williams & Co., In New York, N. Y.
	Embossed paper	Hampden Glazed Paper & Card Co., Holyoke, Mass.	Dullcoat	Suede mat coated papers	New York, N. Y. The Marvellum Co., Holyo
anagh	Counter displays	Robertson Paper Box Co., Inc. Montville, Conn.	Dullset	Inks	Mass. Geo. H. Morrill Co., D
lan-D-Pak larex	Printed transparent wraps	Daniels Mfg. Co., Rhinelander, Wis.			General Printing Ink Cor New York, N. Y.
'Artagnan	Thermoplastic coating seal- ing compounds	Dewey & Almy Chemical Co., Cambridge, B., Mass.	Dulseal	Gummed matted acetate sheeting	General Laminating, Inc., No York, N. Y.
	Cover paper	United Mfg. Co., Springfield, Mass.	Dundee Fabrics	Box cover paper	Chas. W. Williams & Co., In New York, N. Y.
laysette	Box paper	Kupfer Bros. Co., New York, N. Y.	Dundee Plaid	Embossed mice paper	Hazen Paper Co., Holyo Mass.
eco Baskets	Paper tills	Waldorf Paper Products Co., St. Paul, Minn.	Duo-Bio	Bottle and jar cleaning ma- chine	Karl Kiefer Machine Co., C cinnati, O.
eco Board	Decorated board	Waldorf Paper Products Co., St. Paul, Minn.	Duo-Piston	Filling machine for viscous materials	Karl Kiefer Machine Co., C cinnati, O.
eco Boxes	Decorated boxes	Waldorf Paper Products Co., St. Paul, Minn.	Duo-Seal	Custom lamination	C. B. Henschel Mfg. Co., N waukee, Wis.
Pecopad	Padding and decorative paper	Geo. H. Sweetnam, Inc., Cambridge, Mass.	Duo-Sheen	Embossed mica paper	Hazen Paper Co., Holyo Mass.
ecouffe	Soda straw and toothpick wrapping machines	Arenco Machine Co., Inc., New York, N. Y.	Duplex	Labeling machines and acces-	Liquid Carbonic Corp., C
Deerflex	Supercalendered sulphite	Deerfield Glassine Co., Mon- roe Bridge, Mass.	Duplex	sories Lug cap	cago, III. National Seal Corp., Brookl
Defender	Steel strapping	Signode Steel Strapping Co., Chicago, III.	Duplex	Shipping-display boxes	N. Y. The Hinde & Dauch Paper C
efoamer	Felt cleaners (for paper mfrs.)	Atlas Gum & Sizing Co., New York, N. Y.	Duranol	Transparent boxes	Sandusky, O. Joseph H. Meyer Bros., No.
eko-Art	Colored and embossed foil	Reynolds Metals Co., Rich- mond, Va.	Durapak	Advertising displays Parchmentized kraft	York, N. Y Paterson Parchment Paper C
eltareal	Bag with pouring spout	Bemis Bro. Bag Co., St. Louis,	Duratite	Tin printing ink	Bristol, Pa. Crescent Ink & Color Co.
ependon	Box stays	McLaurin-Jones Co., Brook-			Pa., Phila., Pa.
esign Craft	Display sets—corrugated	Sherman Paper Products Corp.,	Durawhite	Boxboard	Paper Package Co Indianas lis, Ind.
etecto	Scales	Newton Upper Falls, Mass. Detecto Scales Inc., Bklyn.,	Durez	Phenolic molding compounds	Inc., N. Tonawanda, N.
Detecto-Gram	Scales	N. Y. Detecto Scales Inc., Bklyn.,	Durite	Phenol-furfural phenol-form- aldehyde heat-setting	Durite Plastics, Phila., Pa
etecto-Matic	Scales	N. Y. Detecto Scales Inc., Bklyn.,	Durmas	molding compositions Boxes and boxboards	Sample-Durick Co., Inc., Ind
Dewalco	Labeling adhesives	N. Y. Dewey & Almy Chemical Co.,	Durmaskote		Orchard, Mass.
Discell	Filter	Cambridge, B., Mass. Karl Kiefer Machine Co., Cin-		Coating, for boxboard	Sample-Durick Co., Inc., Ind Orchard, Mass.
Diafane		cinnati, O.	Du-Tone	Triple edge cellophane rib- bons	Du-Tone Ribbon Corp., N York, N. Y.
CINTERN C	Lacquered glassine	Riegel Paper Corp., New York, N. Y.		Chenille and tinsel pointed	

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS	TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Dux Bek		Central Waxed Paper Co., Chicago, III.	Falco	Inks	Fuchs & Lang Mfg. Co., Div General Printing Ink Corp. New York, N. Y.
Duz-Pak	Carriers for cans and bottles	Brown & Bailey Co., Phila., Pa.	Faltex	Inks	New York, N. Y. Fuchs & Lang Mfg. Co., Div General Printing Ink Corp. New York, N. Y.
E. Z. Tearstrip	Paraffined containers	Mono Service Co., Newark,	Fanfare	Box covering paper	Ches. W. Williams & Co., Inc. New York, N. Y.
agloss	Gloss printing inks	N. J. Eagle Printing Ink Co., Div.	Fast to Light	Flint glazed papers	Wyomissing Glazed Paper Co
ada Amadaa	Face of China	General Printing Ink Co. New York, N. Y.	Fernwood	Box covering paper	Reading, Pa. Chas. W. Williams & Co., Inc New York, N. Y.
arly American	papers	Louis Dejonge & Co., New York, N. Y. Chas. W. Williams & Co., Inc.,	Fiberpak Drum	Fibre drum	The Container Co., Van Wer
asy Lift	Combination paper bag clo-	New York, N. Y. Consolidated Packaging Ma-	Fibestos	Cellulose acetate molding compound	Monsanto Chemical Co., Pla tics Div., Springfield, Mass
cono-Cards	sure and handle Display cards	chinery Corp., Buffalo, N. Y. Waldorf Paper Products Co.,	Fibo-Bilt	Die-cut display material	Badger Merchandising Display Inc., Milwaukee, Wis.
conomy	Mailing bags	St. Paul, Minn. Bemis Bro. Bag Co., St. Louis,	Fibo-Board	Special heavy mounting board	Badger Merchandising Di plays, Inc., Milwaukee, Wis
conomy	Fibre drums	Mo. Carpenter Container Co., Inc., Bklyn, N. Y.	Fibre Lite	Card stock	Waldorf Paper Products Co St. Paul, Minn.
conomy Mailer	Mailing box	The Mason Box Co., Attleboro	Fiesta Flowers	Fancy printed papers	Louis Dejonge & Co., Ne York, N. Y.
conomy Packager	Carton sealer and weigher	Falls, Mass. Triangle Package Machinery Co., Chicago, III.	Fill-Freeze	Cartons	Container Corp. of Americ Chicago, III.
conomy Sprayo	Liquid spray to prevent ink drying on press	Chemical Color & Supply Co., Div. General Printing Ink	Filma-Seal	Innerseal covering mouth of bottle	Ferdinand Gutmann & Co Brooklyn, N. Y.
Econopac	Specialty wraps	Corp., Chicago, III. Milprint, Inc., Milwaukee,	Fine Linen	Fancy printed	Louis Dejonge & Co., Ne York, N. Y.
Edtbauer-Duplex		Wis. B. F. Gump Co., Chicago, III.	Fine-Sheen	Embossed mica paper	Mass. Paper Co., Holyok
gyptian	chines Paper lacquers	The Egyptian Lacquer Mfg.	Fitchco	Board lining and paper	Fitchburg Paper Co., Fitchbur Mass.
Electrifugal	Liquid pumps	Co., New York, N. Y. Allis-Chalmers Mfg. Co., Mil-	Flashdri	Quick drying printing inks	Fred'k H. Levey Co., Inc., Ne York, N. Y.
Elec-Tri-Pak	Electric vibratory feed weigh-	waukee, Wis. Triangle Package Machinery Co., Chicago, III.	Flash Foils	Fancy paper	Louis Dejonge & Co., Ne York, N. Y.
Electro Tempered	Bottles	Owens-Illinois Glass Co., To-	Flat-Tin-Can	Foil lined envelope	Berkowitz Envelope Co., Ke sas City, Mo.
Ellisco	Cans and metal containers	ledo, O. George D. Ellis & Sons, Inc., Phila., Pa.	Flat-Top Flav-O-Fresh	Conveyor chain Coffee bags	Link-Belt Co., Chicago, III. Oneida Paper Products, In
Elmendorf	Tearing tester	Thwing-Albert Instrument Co. Phila., Pa.			New York, N. Y., also Co tinental Bag Specialt Corp., New York, N. Y.
Embrite	Embossed mat papers	The Marvellum Co., Holyoke, Mass.	Flav-O-Tainer	Pliofilm lined bags	Thomas M. Royal & Co., Phil
mpeco	Housefurnishing ware	National Can Corp., New York, N. Y.	Fleetfold	Moistureproof - greaseproof	Sutherland Paper Co., Kalar zoo, Mich.
namelette	Pyroxylin papers	C. R. Whiting Co., Inc., Hack- ensack, N. J.	Fleurette	Box paper	Kupfer Bros. Co., New Yo N. Y.
Endweld	Tube filling and sealing ma- chine	Karl Kiefer Machine Co., Cin- cinnati, O.	Flexi-Cap	Liquid and powder dispens- ing closures	Double Duty Products, In Cleveland, O.
Engineered Precision	All Gardner - Richardson products	Gardner-Richardson Co., Mid- dletown, O.	Flexi-Cartons	Paper bags	Bemis Bro. Bag Co., St. Los Mo.
Engradel	Transparent decalcomania	Palm, Fechteler & Co., New York, N. Y.	Flexo-Flint	Laminating paper for folding box board	Matthias Paper Corp., Phil
Essyew	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.	Filipseal	Vacuum and hermetic jar closures	The Aridor Co., Chicago, III
Ethocel	Ethyl cellulose for lacquers and molding compounds	The Dow Chemical Co., Mid- land, Mich.	Floredora	Lace box papers	Hazen Paper Co., Holyo Mass.
Ethocel Plastic Granules Ethofoil	Ethyl cellulose molding gran- ules	The Dow Chemical Co., Mid- land, Mich. The Dow Chemical Co., Mid-	Fior-A-Fresh	Cellophane bags	Oneida Paper Products, Ir New York, N. Y., also Co tinental Bag Specialti Corp., New York, N. Y.
Ethofoil	sheeting Transparent sheeting	land, Mich. The Dow Chemical Co., Mid-	Floralettes	Cellophane mats	Shellmar Products Co., A
Eureke	Rule press	land, Mich. J. F. Helmold & Bro., Inc., Chi-	Flossine	Padding paper-glassine	Vernon, O. George H. Sweetnam, Ir
Everyday	Bendall attachment Packaged inks in cans	cago, III. International Prtg. Ink Div. of	Flowers and Frills	backed Fancy paper	Cambridge, Mass. Louis Dejonge & Co., No. York, N. Y.
F 14	0	Interchemical Corp., New York, N. Y.	Flowers and Ribbon	Fancy paper	Louis Dejonge & Co., No. York, N. Y.
Every Use Exact Weight	Box covering paper Check-weighing scales	Chas. W. Williams & Co., Inc New York, N. Y. Exact Weight Scale Co., Co-	Foilette	Box paper	Kupfer Bros. Co., New Yor N. Y.
Excell-O	Printed cellulose ribbon	lumbus, O. Freydberg BrosStrauss, Inc.,	Foil Sea Shell Swirl	Box covering paper	Chas. W. Williams & Co., In New York, N. Y.
Executive		New York, N. Y. District of Columbia Paper	Folia Ting	Adhesives and acetate (spe- cial)	Mor-Gan Laminating & Fol ing Co., New York, N.
Executive Velour	and embossed boxcovers Suede finish	Mills Inc., Washington, D. C.	Foilsman	Foil papers	C. R. Whiting Co., Inc., He enseck, N. J.
Ex-L-Ite	Tin plate	District of Columbia Paper Mills Inc., Washington, D. C. Republic Steel Corp., Cleve- land, O.	Foldomatic	Folding and display cartons	The Interstate Folding Box C Middletown, O.
Eye-Petized	Illustrations of prepared food	The United States Printing &	Fold-Pak	Shipping cartons	Container Corp. of Amer Chicago, III.
-	labels	Lithograph Co., Cincinnati (Norwood), Ohio	Foldtite	Mailing box	The C. J. Fox Co., Provider R. I.
EZ E Z D	Hand operated air cleaner	U. S. Bottlers Machinery Co., Chicago, III.	Food Pak	Plain cellophane bags	Food Packaging, Div. of A print, Inc., Milwaukee, W
E-Z-Pec	Cellulose bags	U. S. Envelope Co., Spring- field, Mass.	Food-Paks Force	Drinking containers Machine for numbering cases or cartons	Dixie-Vortex Co., Easton, P. Wm. A. Force & Co. I Brooklyn, N. Y.
FMC	Canning machinery	Food Machinery Corp.	Foxocals	Decalcomania transfers	The Foxon Co., Provider
		Sprague-Sells Div., Hooperston, III.	Foxon	Labels, tags, seals	The Foxon Co., Provider R. I.
Fabkote	Pyroxylin coated latex im- pregnated fibre	E. I. du Pont de Nemours & Co., Inc., Arlington, N. J.	Frame-Vue	Paper cartons, double end and side walls	cinnati (Norwood), O.
Fabrikoid E-1	Pyroxylin coated and impreg- nated fabric	Inc., Arlington, N. J.	Fra-Pac	Ice cream package	Bloomer Bros. Co., New Wayne Co., New York S
Fairette	Box paper	Kupfer Bros. Co., New York, N. Y.	Fresheen	Waxed bags	Dixie Wax Paper Co., I Dallas, Texas

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Frigid Board	Cold storage stock	Waldorf Paper Products Co.,	Grip-Tite	Tape, gummed	Chicago Gum Tape Co., Chi-
Frost-Sheen	Embossed mica paper	St. Paul, Minn. Hazen Paper Co., Holyoke,	Grizzlybear	Waterproof stretchable wrap-	cago, III. Angier Corp., Framingham
Full-Flow	Metal liquid shipping con-	Mass. Wheeling Corrugating Co.,	Guardian	ping paper Tamper proof aluminum bot-	Mass. Guardian Safety Seal Co., Chi-
Full Measure	Stock printed cellophane	Wheeling, W. Va. The Dobeckmun Co., Cleve-	Gumcraft	tle closures Gummed paper and tape	cago, III. Gummed Tape & Devices Co.
Full-View	Box window top	W. H. Deisroth Co., Inc.,	Gumcraft Liflat	Glassine Flat label paper	Bklyn., N. Y. Gummed Tape & Devices Co.,
Ful-Lok	Cellophane bags	Phila., Pa. Oneida Paper Products, Inc., New York, N. Y.; also Continental Bag Specialties Corp., New York, N. Y.		rischaet paper	Bklyn, N. Y.
fusedge	Ribbon made of cut sealed acetate fabric	Freydberg BrosStrauss, Inc., New York, N. Y.	Haller	Filling machines Fruit and berry washers	Horix Mfg. Co., Pittsburgh,
			Halyard	Wire opener cap	Anchor Hocking Glass Corp., Lancaster, O.
GB 2 Press	Ctomping modine	Griffin, Campbell, Hayes.,	Hammerclear	Carton sealing paper	Anchor Hocking Glass Corp.,
	Stamping machine	Walsh, Inc., New York, N. Y.	Hammerglass	Glassine paper	Anchor Hocking Glass Corp.
Sala	Casein	George Morrell Corp., Muske- gon Hts., Mich.	Hammerglint	Tarnish resistant paper	Lancaster, O. Anchor Hocking Glass Corp.,
Sator Hide	Kraft paper	George & Sherrard Paper Co., New York, N. Y.	Hammer-Parchment	Greaseproof paper	Lancaster, O. Anchor Hocking Glass Corp.,
Saylord	Fibre boxes and folding car- tons	Gaylord Container Corp., St. Louis, Mo.	Hampak	Printed transparent wraps	Lancaster, O. Daniels Mfg. Co., Rhinelander,
Gem-Cote	Plastic laminations and plastic coatings for paper and cardboard	Gemloid Corp., Elmhurst, L. I., N. Y.	Handelok	Carry bag	Wis. Wolf Bros., Phila., Pa.
Semglo	Plastic flashlight with neon- glow effect	Gemloid Corp., Elmhurst, L. I., N. Y.	Handilift	Tiering machine	Standard Conveyor Co., St. Paul, Minn.
Gemlike	Plastic material with scintil-	Gemloid Corp., Elmhurst, L. I.,	Handirol	Mending and binding tape	Gummed Tape & Devices Co., Bklyn., N. Y.
Gemlite		N. Y. Gemloid Corp., Elmhurst, L. I.,	Handy Service	Package of sterilized glass bottles	Owens-Illinois Glass Co., To- ledo, O.
Gemloid and Ename- loid Cloisonné	with cloisonné engraving Plastic sheets with cloisonné designs	N. Y. Gemloid Corp., Elmhurst, L. I., N. Y.	Hang-Rite Hardshell	Garment holders Non-rubbing inks	Waldorf Paper Products Co., St. Paul, Minn. Eagle Printing Ink Co., Div.
Seneral	Box gluing machine	E. G. Staude Mfg. Co., St. Paul, Minn.	Hard-Tex	Inks	General Printing Ink Corp., New York, N. Y.
Seorgian Silver	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.			Fuchs & Lang Mfg. Co., Div. General Printing Ink Corp., New York, N. Y.
Bift Shop	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Harris	Lithographing and gravure presses	Dayton, O.
Blazed Chintz	Printed flint paper	Hampden Glazed Paper and Card Co., Holyoke, Mass.	Hartglass	Embossed sulphite	Hartford City Paper Co., Hart- ford City, Ind.
Slobular	Embossed parchment	George H. Sweetnam, Inc., Cambridge, Mass.	HaD	Corrugated shipping boxes	The Hinde & Dauch Paper Co., Sandusky, O.
Glo-Ray	Gloss inks	International Prtg. Ink Div. of Interchemical Corp., New York, N. Y.	Helmco Helmold	Displays Rules, cutters, notchers, joint brazers	Helmco, Inc., Chicago, III. J. F. Helmold & Bro., Inc., Chi- cago, III.
Slorette	Box paper	Kupfer Bros. Co., New York, N. Y.	Hercules	Rule cutter	J. F. Helmold & Bro., Inc., Chi- cago, III.
Bloss Colorcote	Color gloss surface for pack- aging		Heresite	Phenol-formaldehyde mold- ing compound	Heresite & Chemical Co., Mani- towoc, Wis.
Slosscote	Boxboard	Brooks Bank Note Co., Spring- field, Mass.	Hiawatha	Out-folding carton gluer	E. G. Staude Mfg. Co., St. Paul, Minn.
Blossiroll	Corrugated paper display material	Excelsior Paper Specialties Co., New York, N. Y.	Higlo	Gloss printing inks	J. M. Huber, Inc., New York, N. Y.
ilastone	Box covering paper	Paper City Mfg. Co., Inc.,	Hi-Gloss	Varnishes and inks	Pope & Gray, Inc., New York, N. Y.
Blostone	Printing inks	Holyoke, Mass. American Printing Ink Co., Div. General Printing Ink Corp.	Hi-Gloss	Base paper for lacquer	S. D. Warren Co., Boston, Mass.
Bloswite	Patent coated boxboard	Chicago, III. Brooks Bank Note Co., Spring-	Hi-Low	Composite paper and ship- ping cartons	Container Corp. of America, Chicago, III.
Blow-Cote	Transparent top sizing for	field, Mass.	Himes	One-piece box	American Box Board Co., Grand Rapids, Mich.
Glu-Pa-Co	labels and wraps Vegetable glue	Cambridge, Mass. The F. G. Findley Co., Mil-	Hi-Peco	Cartons for sheets, pillow cases, etc.	High Point, N. C.
Glu-X-Tender	Blender for animal and flex-	waukee, Wis.	Hi-Pak	Cellophane bags for bulk groceries	Thomas M. Royal & Co., Phila., Pa.
Soldentone	ible glues Box covering paper	waukee, Wis. Chas. W. Williams & Co., Inc.,	Hoepner	Automatic scales	Consolidated Packaging Ma- chinery Corp., Buffalo, N. Y.
Sold-Medal	Solid fibre beer carriers	New York, N. Y. Gaylord Container Corp., St.	Holdfest	Letterpress inks	International Prtg. Ink Div. of Interchemical Corp., New
Sold Seal	Cap compound	Louis, Mo. Dewey and Almy Chemical	Holly Scroll	Fancy paper	York, N. Y. Louis Dejonge & Co., New York, N. Y.
	Tin paste Cover compound	Co., Cambridge B, Mass.	Holm Scale	Filling machine	Miller Wrapping & Sealing Ma-
Soldseal	Drum compound Colored specialty tapes	Gummed Tape & Devices Co.	Hooper	Corrugating, printing and container making machinery	chine Co., Chicago, III. F. X. Hooper Co. Inc., Glen- arm, Md.
Goldy	Bottle closure	Bklyn, N. Y. Aluminum Seal Co., New Ken-	Horix	Filling machine	Horix Mfg. Co., Pittsburgh, Pa. Celanese - Celluloid Corp.,
Solveneer	Printing inks	sington, Penna. Sigmund Ullman Co., Div. General Printing Ink Corp.,	H-Scale Huebriks	Synthetic Pearl Essence Box papers	New York, N. Y. Hazen Paper Co., Holyoke,
o Safe Mailers	Mailing boxes	Bronx, N. Y. Everett Young Co., Providence,	Humi-Jar	Jar	Mass. Owens-Illinois Glass Co., To-
Gravity	Roller conveyors and spiral	R. I. Standard Conveyor Co., N.	Humitube	Bags, pouches, tubes and en-	ledo, O. Humitube Mfg. Co., Peoria, III.
Graywire	chutes Display racks	St. Paul, Minn. The Gray Wire Specialty Co.,	Hycoloid	velopes of cellophane Odorless unbreakable con-	Celluplastic Corp., Newark,
Gressene	Grease resistant boxboard	Cleveland, O. Gardner-Richardson Co., Mid-	Hydro-Tite	tainers, tubes and vials Asphalt center boxboard	N. J. Gerdner-Richardson Co., Mid-
sinesetite	Bakery package board	dletown, O. Waldorf Paper Products Co., St. Paul, Minn.	Hy-Glos	Gummed and ungummed la- bels	dletown, O. Tompkins' Label Service, Phila., Pa.
Green Core	Gummed cloth tapes	Mid-States Gummed Paper Co.,	Hy-Lustr	High gloss inks	Robinson Tag & Label Co.,
Greystone	Clasp envelopes	Chicago, III. American Paper Goods Co., Kensington, Conn.	Hyroto	Rotogravure printing machine	New York, N. Y. Rotogravure Engineering Co., East Boston, Mass.
Grip-Tight	Label paste for tin, metals	Paisley Products Inc., Chicago,	Hy-Speed	Bottling machinery	Alsop Engineering Corp., New

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS	TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
ldeal Ideal	Elevators, bucket type Wire stitching machine	B. F. Gump Co., Chicago, III. Ideal Stitcher & Mfg. Co., Ra-	Klean	Printing inks, lithographic supplies	International Printing Ink, Div Interchemical Corp., New York, N. Y.
Illustra-Color	Reproduction method for dis-	cine, Wis. The U. S. Printing & Litho-	Kleer Glaze	Transparent waxed paper	Central Waxed Paper Co., Chi- cago, III.
Imperial Plastic	plays Handles, knobs, pulls, etc.	graph Co., Cincinnati, O. Imperial Molded Products	Kleerview	Glassine	Rhinelander Paper Co., Rhine-
Hardware Impervo	Cardboard outdoor display	Corp., Chicago, III. Arvey Corp., Chicago, III.	Kleer View	Waxed glassine	lander, Wis. Central Waxed Paper Co., Chi-
Impression	Ink embossed box cover	The Marvellum Co., Holyoke, Mass.	Kleerwrap	Glassine	cago, III. Rhinelander Paper Co., Rhine-
Inceloid	Transparent sheeting, adhe-	American Products Mfg. Co.,	Klondike	Gold and silver casein papers	lander, Wis. C. R. Whiting Co., Inc., Hack
Inco-Rolls	sives and coatings Single face corrugated col-	New Orleans, La. Inland Container Corp., Indi-	Klothwhite	Retail store wrapping paper	ensack, N. J. Kalamazoo Vegetable Parch
Inco-Peds	ored display Corrugated colored display	anapolis, Ind. Inland Container Corp., Indi-	Knife-O	Closure	ment Co., Kalamazoo, Mich Owens-Illinois Glass Co., To-
Inco-Steps	material Corrugated colored display	anapolis, Ind. Inland Container Corp., Indi-			ledo, O. Eastman Kodak Co., Rochester
Indette	material Box paper	anapolis, Ind. Kupfer Bros. Co., New York,	Kodaloid	Cellulose nitrate sheeting	N. Y.
Indur	Phenolic molding compounds,	N. Y. Reilly Tar & Chemical Corp.,	Kodapak	Cellulose acetate sheeting	Eastman Kodak Co., Rochester
Innercoat	resins and varnishes Plain waterproof wrapping	Indianapolis, Ind. Angier Corp., Framingham,	Kodstape	Gummed cloth tape	Eastman Kodak Co., Rochester N. Y.
	paper	Mass.	Kork-N-Seal	Initial and re-sealing cap with lever	Continental Can Co., Nev York, N. Y.
nner Lined	Combination carton, heat sealed bag enclosed	Middletown, O.			The Crown Cork & Seal Co. Baltimore, Md.
nnerstrung	Reinforced waterproof wrap- ping paper	Angier Corp., Framingham, Mass.			Williams Sealing Corp., Deca tur, III.
'Insite'' Signs nsulux	Decalcomania transfers Glass block	Milprint, Inc., Milwaukee, Wis. Owens-Illinois Glass Co., To-	Korogel	Soft form of Koroseal	The B. F. Goodrich Co., Akron O.
nsurok		ledo, O. The Richardson Co., Melrose	Korolac	Solution of Koroseal	The B. F. Goodrich Co., Akron
n-Tag	plastic Gravure inks	Park (Chicago), III. In-Tag Div. Interchemical Corp.,	Koroseal	Plasticized polyvinyl chloride	The B. F. Goodrich Co., Akron
		New York, N. Y.	Kraflex	Gummed kraft paper sealing	Central Paper Co., Menasha
International	chinery	International Paper Box Ma- chine Co., Nashua, N. H.	Krimpac	Specialty wraps	Wis. Milprint, Inc., Milwaukee, Wis
iPi	Printing inks, lithographic supplies	International Printing Ink, Div. Interchemical Corp., New	Kromekote	High finish box paper	The Champion Paper & Fibre Co., Hamilton, O.
syngloss	Transparent waxed paper	York, N. Y. Kalamazoo Vegetable Parch-	KVP .	Waxed papers, plain and printed	Kalamazoo Vegetable Parch- ment Co., Kalamazoo, Mich
tstix	(self sealing) Tape, gummed	ment Co., Kalamazoo, Mich. Nashua Package Sealing Co.,	KwickKlasp	Genuine vegetable parchment Mailing boxes	W. H. Deisroth Co., Inc., Phila.
		Inc., Nashua, N. H.			Pa.
vanhoe	Paper containers	Cambridge Paper Box Co., Cambridge Mass.	Kwik-Kleen	Filters (water)	The Liquid Carbonic Corp. Chicago, III.
vorytone	Opaque bread wraps	Newark Paraifine & Parchment Paper Co., Newark, N. J.	Kwikset	Paper cartons	Container Corp. of America Chicago, III.
Jacquard	Embossed and tipped papers	The Marvellum Co., Holyoke	L N F Bond	Printing ink	Sigmund Ullman Co., Div. Gen- eral Printing Ink Corp.
Jalcold	Tin plate	Mass. Jones & Laughlin Steel Corp.,	Labco Fibre	Kraft board	Bronx, N. Y. The LaBoiteaux Co., Inc., Cin-
Jaypaco	Laminated board	Pittsburgh, Pa. Jaypaco Co., New York,	Labelrite	Fully automatic labelers	cinnati, O. New Jersey Machine Corp.
Jaypaco	Laminated board	N. Y. Joe Salwen Paper Co., New	Labelstik	Metal boxes	Hoboken, N. J. George D. Ellis & Sons, Inc.
JW		York, N. Y.	Laveisuk	IVIECAL GOXES	Myers Mfg. Div., Phila.
	Air cleaners	U. S. Bottlers Machinery Co., Chicago, III.	Lace and Flowers	Fancy paper	Louis Dejonge & Co., Nev
JWD	Washers	U. S. Bottlers Machinery Co., Chicago, III.	Lace Frills	Fancy paper	York, N. Y. Louis Dejonge & Co., New
			Lacqueleather	Waterproof leather papers	York, N. Y. C. R. Whiting Co., Inc., Hack-
V 400	Later	N. C. J. D.	Lac-R-Print	Lacquered bags	ensack, N. J. Thomas M. Royal & Co., Phila.
K-600	Leatherette	Narragansett Coated Paper Corp., Pawtucket, R. I.		_	Pa. Chas. W. Williams & Co., Inc.,
Kake Hot	Pick up cement	The F. G. Findley Co., Mil- waukee, Wis.	Lafayette	Box covering paper	New York, N. Y.
Cakimaco	Filter	Karl Kiefer Machine Co., Cincinnati, O.	Lamcote	Cellulose acetate lamination process	Arvey Corp., Chicago, III.
Kala Cork	Cork paper	Kalamazoo Vegetable Parch- ment Co., Kalamazoo, Mich.	Lamcote Cover Lamcote Fabrics	Cover stock Cellulose laminated fabrics	Arvey Corp., Chicago, III. Arvey Corp., Chicago, III.
Calafilm	Wrapping paper	Kalamazoo Vegetable Parch- ment Co., Kalamazoo, Mich.	Laminam	Laminated paper, cloth, foil	General Laminating Co., New York, N. Y.
Kan-D-Pak	Printed transparent wraps	Daniels Mfg. Co., Rhinelander,	Laminizing	Combination of cellulose	U. S. Finishing & Mfg. Co.
(ay-Dee-Pac	Paper pails	Wis. Container Corp. of America,	Laminoid	acetate sheets to paper Combining of cellulose	Chicago, III. Laminoid Inc., N. Bergen, N. J
Keglined	Beer and ale cans	Chicago, III. American Can Co., New York,		acetate to paper and tex- tiles	
Kemgo	Printing compound	N. Y. Markem Machine Co., Keene,	Lamiphane	High-finished surface, pol- ished from liquid applica-	Stecher-Traung Litho. Corp. Rochester, N. Y.
Cennecot	Pyroxylin coated papers	N. H. C. R. Whiting Co., Inc., Hack-	Lam-Lac	tion	
Censington	Clasp envelopes	ensack, N. J.	Lamofilm	boxes, cartons and wraps Simplex moistureproof bags	F. N. Burt Co. Inc., Buffalo N. Y. Benj. C. Betner Co., Devon
		American Paper Goods Co., Kensington, Conn.		or moisture proof liners	Pa.
Ceratol	Imitation leather	Atlas Powder Co., Zapon- Keratol Div., Stamford, Conn.	Lard Pak	Printed transparent wraps	Daniels Mfg. Co., Rhinelander Wis.
Keystone Stay	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Latham	Wire stitchers	Dexter Folder Co., New York N. Y.
Cidette	Box paper	Kupfer Bros. Co., New York, N. Y.	Lattisette	Box paper	Kupfer Bros. Co., New York N. Y.
Cidskin	Pyroxylin box papers	Hazen Paper Co., Holyoke, Mass.	Lavette	Box paper	Kupfer Bros. Co., New York
Ciltie Plaids	Box covering paper	Chas. W. Williams & Co., Inc.,	Leafage	Embossed mica paper	Hazen Paper Co., Holyoke
(Impak	Crepe wadding	New York, N. Y. Kimberly-Clark Corp., Chicago,	Leatherette	Box paper	Mess. Kupfer Bros. Co., New York
ing Markwell	Marking and printing inks	III. Markem Machine Co., Keene,	Leatherette	Water proof leather finished	N. Y. The Marvellum Co., Holyoke
Civar	Artificial leather	N. H. The Plastic Coating Corp., Holyoke, Mass.	Lenonet	papers Open-mesh bags	Mass. Bemis Bro. Bag Co., St. Louis Mo.

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Lenox Gold	Gold and platinum box cov-	McLaurin-Jones Co., Brook-	Mailmaster	Mailing box	The Moson Box Co., Attleboro
Lepaco	erings Moisture and greaseproof	field, Mass. Lebanon Paper Box Co., Leba-	Mainstay	Bag closing twine	Falls, Mass. Bemis Bro. Bag Co., St. Louis,
Lev-A-Lift	board Device for friction plug cans	non, Pa. The Lev-A-Lift Co., New York,	Makalot	Phenol resin molding com-	Mo. Makalot Corp., Boston, Mass.
Levelbest	Containers, shipping	The Lev-A-Lift Co., New York, N. Y. Fibreboard Prods., Inc., San		pound	
Leverpak Drum	Fibre drum	Francisco, Calif. The Container Co., Van Wert,	Mallefold	Malleable crease display ma- terial	Waldorf Paper Products Co. St. Paul, Minn.
		0.	Marelux	Bags for hygroscopic prod- ucts	Menasha Products Co., Men- asha, Wis.
ightning.	Coated box coverings	McLaurin-Jones Co., Brook- field, Mass.	Marble-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
ightning Seal. ikwid Proof Black	Bread wrappers	Kalamazoo Vegetable Parch- ment Co., Kalamazoo, Mich. Chemical Color & Supply Co.,	Marco	Leather grain paper	The Marvellum Co., Holyoke, Mass.
		Div. General Printing Ink	Markem	Printing machines	Markem Machine Co., Keene, N. H.
ily White	Box covering paper	Corp., Chicago, III. Chas. W. Williams & Co., Inc., New York, N. Y.	Master	Infolding diagonal gluing ma- chine	E. G. Staude Mfg. Co., St. Paul, Minn.
nco	Belt conveyor	Karl Kiefer Machine Co., Cin- cinnati, O.	Masterbuilt	Candy boxes	F. J. Schleicher Paper Box Co., St. Louis, Mo.
ink-Belt	Elevating, conveying and power transmission equip- ment	Link-Belt Co., Chicago, III.	Mastercraft	All Ben Mont products	Ben Mont Papers, Inc., Benning- ton, Vt.
ion Brand	Adhesives	Manhattan Paste & Glue Co. Inc., Bklyn., N. Y.	Mastercraft	Leatherette boxes and dis- plays	Harlich Mfg. Co., Mastercraft Div., Chicago, III.
lquid	Labeling machines and ac-	The Liquid Carbonic Corp.,	Master Prints	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
iquid Single	cessories Labeling machines	Chicago, III. The Liquid Carbonic Corp., Chicago, III.	Master Ray	Metal surfaced counter and window displays	Reynolds Metals Co., Richmond, Va.
lquipak Drum	Fibre drum	The Container Co., Van Wert, Ohio	Masterwrap	Interfolded waxed tissue	Rhinelander Paper Co., Rhine- lander, Wis.
statte	Box paper	Kupfer Bros. Co., New York, N. Y.	Matador	Paper bag machines	H. H. Heinrich, Inc., New York, N. Y.
thocrome	Industrial finishes Printing process	Ault & Wiborg Corp., New York, N. Y. The Dobeckmun Co., Cleve-	Match-Sox	Kit for matching colors	International Printing Ink, Div. Interchemical Corp., New York, N. Y.
ithox	Printing inks, lithographic	land, O. International Printing Ink, Div.	Mayfair	Salt and pepper shakers	Owens-Illinois Glass Co., To- ledo, O.
at to	supplies	Interchemical Corp., New York, N. Y.	Mayflower	Paper drinking cups	American Paper Goods Co., Kensington, Conn.
thwite	White uncoated boxboard Styrene laminating	The Gardner-Richardson Co., Middletown, O. Catalin Corp., New York,	McLaurin	Gummed tape tester	Thwing-Albert Instrument Co., Phila., Pa.
pabond palin	Styrene molding powders	N. Y. Catalin Corp., New York,	Measure Scoop	Bag filling device	Food Packaging, Div. of Mil- print, Inc., Milwaukee, Wis.
avar	Styrene surface coating	N. Y. Catalin Corp., New York,	Melco	Decorated metal containers	Seymour Products Co., Sev-
ock-Tite	Dress box	N. Y. American Box Board Co.,	Melody Print	Box covering paper	mour, Conn. Chas. W. Williams & Co., Inc., New York, N. Y.
ck Top	Screw top can with locking	Grand Rapids, Mich. Continental Can Co., New	Menasha	Paraffined cartons and papers	The Menasha Products Co.,
ock Top	lugs Paper ice cream can	York, N. Y. National Folding Box Co.,	Mercury	Closure	Menasha, Wis. Owens-Illinois Glass Co., To-
ocktop	Paper cans	New Haven, Conn. Morris Paper Mills, Chicago,	Mercury	Carton gluer	ledo, O. E. G. Staude Mfg. Co., St.
oc-Rim	Fibre shipping drums	111	Mercury Process	Vignette for labels	Paul, Minn. The U. S. Printing & Litho-
ftee	Jewelry boxes and display	Carpenter Container Corp., Bklyn, N. Y. Union Wadding Co., Paw-	Metacel	Metal adhesive tape	graph Co., Cincinnati, O. Reynolds Metals Co., Rich-
-Maintenance	Electric motors (3-phase and	Allis-Chalmers Mfg. Co., Mil-	Metal-Art	Fancy paper	mond, Va. Louis Dejonge & Co., New
okit	d-c) Set-up and acetate boxes	waukee, Wis. Flower City Specialty Co., Rochester, N. Y.	Metal Art Plaid	Box covering paper	York, N. Y. Holyoke Card & Paper Co.,
omlite	Textile box papers	Hazen Paper Co., Holyoke,	Metal Edge	Reinforced paper boxes	Springfield, Mass. National Metal Edge Box Co.
otol	Processed and/or com-	Mass. Naugatuck Chemical Div., U.S.	Metalglass	Metallic coated glassine	Phila., Pa. Hartford City Paper Co., Hart-
w Pressure	Bottle fillers	Rubber Co., New York, N. Y. The Liquid Carbonic Corp.,	Metaline	Printed embossed paper	ford City, Ind. Hampden Glazed Paper &
cite	Methyl methacrylate resin	Chicago, III. E. I. du Pont de Nemours & Co.,	Metallic	Pyroxylin coated metallic	Card Co , Holyoke, Mass. Hazen Paper Co., Holyoke
marith	Cellulose acetate molding	Inc., Arlington, N. J. Celanese Celluloid Corp., New York, N. Y.	Metaloid	Embossed signs and boxes	Chaspec Mfg. Co., Inc., New York, N. Y.
	Cellulose acetate sheets, rods, tubes and rolls	, 10.11	Metaloid	Pyroxylin coated paper	The Plastic Coating Corp.
marith Protectoid	Cellulose acetate sheeting	Celanese Celluloid Corp., New York N. Y.	Metalour	Gold and silver papers	Holyoke, Mass. The Marvellum Co., Holyoke
steroid	Transparent and colored vials	Lusteroid Container Co. Inc.	Metaltite	Flat gummed paper	Mass. The Gummed Products Co.
str-Cote	and tubes Gloss printing inks	South Orange, N. J. Eagle Printing Ink Co., Div. General Printing Ink Co.,	Metaltone	Box covering paper	Troy, O. Chas. W. Williams & Co., Inc. New York, N. Y.
strette	Box paper	New York, N. Y. Kupfer Bros. Co., New York,	Metalustre	Metallic lacquer enamels	Maas & Waldstein Co., New- ark, N. J.
stre-Print	High gloss printed labels and	N. Y. Dennison Mfg. Co., Framing-	Metex	Gold or silver cellulose ace-	E. L. Cournand, Inc., Nev York, N. Y.
stro	seals Aniline printing process Cellophane ribbon	ham, Mass. Milprint, Inc., Milwaukee, Wis. Food Packaging Inc., Mil-	Methocel	Dow methyl cellulose	The Dow Chemical Co., Mid
stron	Polystyrene molding com-	waukee, Wis. Monsanto Chemical Co., Plas-	Metlak Metso	Silver and gold ink Cleansers	Pope & Gray, Inc., New York N. Y. Philadelphia Quartz Co., Phila.
istron	pound Wrapping paper	tics Div., Springfield, Mass. Hartford City Paper Co., Hart-	Mic	Plastics, molded	Pa. Molded Insulation Co., Phila.
strseal	Closure	ford City, Ind. Owens-Illinois Glass Co., To-	Micacrystal	Crinkled cellophane	Pa. Aldine Paper Co., New York
x-Lite	Displays with flashers	ledo O. Reynolds Metals Co., Rich-	Michcote	Super white boxboard	N. Y. Michigan Carton Co., Battle
ixor Gold	Gold box covering	mond, Va. McLaurin-Jones Co., Brook-			Creek, Mich.
uxorline	Box cover paper	field, Mass. Matthias Paper Corp., Phila., Pa.	Midget Midget	Static eliminator Wire staples	The Simco Co., Phila., Pa. Acme Staple Co., Camden N. J.
		1 44	Midget	Labeling machines and ac- cessories	The Liquid Carbonic Corp. Chicago, III.
AAS	Fillers	Food Machinery Corp., Sprague-Sells Div., Hoopers- ton, 111.	Mikah	Glues and pastes, guns, lac- quers	National Adhesives Div., National Starch Products, Inc. New York N. Y.

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Millbridge	General	Springfield Coated Paper	Neo-Classic	Embossed mica paper	Hazen Paper Co., Holyoke
		Corp., Camden, N. J.		Nesting container	Mass. Sutherland Paper Co., Kala
Miller	Package and bundle wrap- ping machines	Miller Wrapping & Sealing Machine Co., Chicago, III.	Nestcup		mazoo, Mich.
Mil-O-Seal	Pliofilm encasing cooked meat loaves	Milprint, Inc., Milwaukee, Wis.	Nestrite	Nested, waxed and un- waxed containers	Lily-Tulip Cup Corp., New York, N. Y.
Milwaukee	Aniline printing press and bronzing machines	C. B. Henschel Mfg. Co., Mil- waukee, Wis.	Newman Seal	Circular compounded crimped closure	Continental Can Co., New York, N. Y.
Airette	Box paper	Kupfer Bros. Co., New York, N. Y.	New Perfection	Dropping outfits	Pennsylvania Glass Produc Co., Pittsburgh, Pa.
Airofoil	Imitation foil papers	The Marvellum Co., Holyoke, Mass.	Nitron	Sheets, cellulose nitrate; rods and tubes	Monsanto Chemical Co., Pla tics Div., Springfield, Mass.
Mirolite	Transparent bread wraps	Newark Paraffine & Parchment	Nixonoid	Cellulose nitrate (pyroxylin)	Nixon Nitration Works, Nixon N. J.
Airrodescent	Box papers	Paper Co., Newark, N. J. Hazen Paper Co., Holyoke,	No-Kap	Closures	No-Kap Closures (U.S.A. Inc., Providence, R. I.
Airror Flints	Glazed flint	Mass. Louis Dejonge & Co., New	No-Kep	Collapsible tubes	National Collapsible Tube Co
Aodem Clipper	Automatic bag-making ma-	York, N. Y. Modern Containers, Inc., Los	Nolox	Knock-down paper box	Providence, R. I. American Box Board Co
Aoderne Dull	chine Clay coated paper	Angeles, Calif. Bradner Smith & Co., Chicago,	Nolox	Garment boxes	Grand Rapids, Mich. Morris Paper Mills, Chicag
Antique Aodern Union	Metal displays	III. Union Steel Products Co.,	No-Lox	Folding carton	Robert Gair Co., Inc., Ne York, N. Y.
Aoistite	Bakery package board	Albion, Mich. Waldorf Paper Products Co.,	Non-Scuff	Liner board on corrugated	F. J. Kress Box Co., Pittsburg
		St. Paul, Minn.	Norbutus	boxes Pyroxylin coated metallic	Pa. Hazen Paper Co., Holyok
Moist Pruf Molloy-Made	Set up paper cigar boxes Imitation leather containers	Consolidated Box Co. Inc., Tampa, Fla. The S. K. Smith Co., Chicago,	Norloc	papers in brilliant colors Molded plastic packages	Mass. Norton Laboratories, Inc
		III. The Liquid Carbonic Corp.,	No Sol Vit	Alkali free serum containers	Lockport, N. Y. T. C. Wheaton Co., Millvill
Monarch	Fillers	Chicago, III.	Novar	Decalcomania label	N. J. Palm, Fechteler & Co., Ne
Monarch	Right angle folding box gluer	Paul, Minn.	Nu-Craft	Display, corrugated	York, N. Y. Sherman Paper Products Corp
Monocell	Filter	Karl Kiefer Machine Co., Cin- cinnati, O.	Nu-Curve	Display, corrugated	Newton Upper Falls, Mass Sherman Paper Products Corp
Mono Kleen Kups	Paraffined containers	Mono Service Co., Newark, N. J.	Nub-Linen	Fancy printed	Newton Upper Falls, Mass
Aono-Pak	Collapsible tubes for single use	A. H. Wirz, Inc., Chester, Pa.	Nugget -	Cover paper	Louis Dejonge & Co., Ne York, N. Y. United Mfg. Co., Springfiel
Aono-Piston	Filling machine for viscous materials	Karl Kiefer Machine Co., Cin- cinnati, O.	Nu-Glas	Glass tumblers, jars and bot-	Mass. Anchor Hocking Glass Corp
Aonoscale	Can filling machine	Karl Kiefer Machine Co., Cin- cinnati, O.	NuGleze	tles	Lancaster, O.
Aono Spout	Spout fitting	Continental Can Co., New		Box covering paper	Chas. W. Williams & Co., Inc. New York, N. Y.
Aonsento C. N.	Cellulose nitrate (pyroxylin)	York, N. Y. Monsanto Chemical Co., Plas-	Nu-Hide	Box cover paper	Matthias Paper Corp., Philippa.
Aon Glos	Gloss ink	tics Div., Springfield, Mass. Geo. H. Morrill Co., Div.	NuMat	Box covering paper	Chas. W. Williams & Co., In New York, N. Y.
		Geo. H. Morrill Co., Div. General Printing Ink Corp., New York, N. Y.	Nu-Trim	Display, corrugated	Sherman Paper Products Corp Newton Upper Falls, Mass
Aorris	Box closing lock	Robertson Paper Box Co., Inc., Montville, Conn.	Nuvohack	Folding paper box	Everett Young Co., Providence R. I.
Aorrison	Wire stitchers	Harris - Seybold - Potter Co., Dayton, O.	Nuvopak	Merchandising containers	Cambridge Paper Box Co Cambridge, Mass.
Aosaic Parquetry	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.			
Aotoair	Pump for vacuum and pres- sure	New Jersey Machine Corp., Hoboken, N. J.	Obaco	Folding paper box	National Folding Box Co New Haven, Conn.
Aulti	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp.,	O. a J.	Labeling machines and ac- cessories	Liquid Carbonic Corp., Cl cago, III.
Aultitite	Printing inks	Bronx, N. Y. Sigmund Ullman Co., Div. Gen-	Oldelace	Fancy paper	Louis Dejonge & Co., Ne York, N. Y.
vigititie	Frinting links	eral Printing Ink Corp., Bronx, N. Y.	Old Tavern	Gold and platinum box cov- erings	McLaurin-Jones Co., Broo field, Mass.
Aultitone	Printing inks	Sigmund Ullman Co., Div. Gen- eral Printing Ink Corp.,	Onized	Containers	Owens-Illinois Glass Co., Ti ledo, O.
Aural	Fancy waterproof box paper	Bronx, N. Y. The Marvellum Co., Holyoke,	Opalite	Cast phenolic semi-transpar- ent	Catalin Corp., New Yor N. Y.
Ayers	Metal boxes	Mass. George D. Ellis & Sons, Inc.,	Opalon	Cast phenolic resin and cast- ings	Monsanto Chemical Co., Plantics Div., Springfield, Mass
, yeis	rvietai ooxes	Myers Mfg. Div., Phila., Pa.	Orientone	Box covering paper	Chas. W. Williams & Co., Inc. New York, N. Y.
Ayracol	Cartons	Container Corp. of America, Chicago, III.	Orpco	Corrugated boxes and dis- plays	Ottawa River Paper Co., T ledo, O.
		Chicago, III.	Outserts	Package adv. for the outside of containers	Outserts Inc., New York, N.
Vafomatic	Folding paper box	National Folding Box Co., New Haven, Conn.	Overseal	Bottle closure	Aluminum Seal Co., New Ke sington, Pa.
Vanking	Chinese papers	The Stevens-Nelson Paper Corp., New York, N. Y.			
Napcones	Displays	The National Process Co., New York, N. Y.	P.I.V. & V.R.D. PMS Gel	Variable speed transmission Adhesives, starch derived	Link-Belt Co., Chicago, III. Stein, Hall Mfg. Co., Chicag
Napconstruction	Unmounted displays	The National Process Co., Inc., New York, N. Y.	Pace-Maker	Table gummer	III. New Jersey Machine Corp
Nap grippe	Displays	The National Process Co., Inc.,	Packomatic	Packaging machinery	Hoboken, N. J. J. L. Ferguson Co., Joliet, II
Vational	Labeling machines and acces-	New York, N. Y. The Liquid Carbonic Corp.,	Packomatic Chief Packomatic	6-in-line net wt. scale	J. L. Ferguson Co., Joliet, 11
lational	sories Tape moistening machine	Chicago, III.	Commander	Container opener and posi- tioner	J. L. Ferguson Co., Joliet, II
Vational	Food products metal bags	Nashua Package Sealing Co., Inc., Nashua, N. H. Reynolds Metals Co., Rich-	Packrette	Box paper	Kupfer Bros. Co., New Yo N. Y.
Vational	Packaging machinery	mond, Va. U. S. Automatic Box Machin-	Pac-Kups Padinol	Paper containers Flexible adhesive	Dixie-Vortex Co., Easton, The Fales Chemical Co., In Cornwall Landing, N. Y.
	. sexaging machinery	ery Co., Inc., Roslindale, Boston, Mass.	Padocel	Wadding for packing	Cornwall Landing, N. Y. Geo. H. Sweetnam, In Cambridge, Mass.
ICCO	Tin cans	National Can Corp., New York, N. Y.	Padorel	Padded paper	Geo. H. Sweetnam, Inc., Co
Needlekraft	Paper for box coverings	Pejepscot Paper Co., New York, N. Y.	Padox	Candy box tops	bridge, Mass. Union Wadding Co., Pa
Veillite	Phenol-formaldehyde mold-	Watertown Mfg. Co., Water-	Padsit	Padding paper-glassine	
Neocell	ing material Cellulose vials, containers	town, Conn. Celluplastic Corp., Newark,	Paisflex	backed Flexible adhesives	Cambridge, Mass. Paisley Products Inc., Chica

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS	TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Paisley	General line	Paisley Products Inc., Chicago,	Plastecele	Cellulose acetate sheeting	E. I. du Pont de Nemours & Co.
Paistex	Latex base adhesives	III. Paisley Products Inc., Chicago,		Cellulose acetate molding powder	Inc., Arlington, N. J.
Paistick	Office, school, library paste		Plastic Basket	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Palmetto	Box covering paper	III. Chas. W. Williams & Co., Inc., New York, N. Y.	Plasticolor Plastik Foil	Cellulose laminated cover paper Roll leaf for plastics	The Dobeckmun Co., Cleve- land, O. Peerless Roll Leaf Co. Union
Pamilla	Silver polishing cloth	The Gorham Co., Providence,			City, N. J.
Paperglos	Glassine paper	R. I. Westfield River Paper Co.,	Plateglassine	Bleached glassine	Deerfield Glassine Co., Mon- roe Bridge, Mass.
Paragon	Two-piece caps	Russell, Mass. Anchor Hocking Glass Corp.,	Platelustre Plexiglas	Transparent colored lacquers	Mass & Waldstein Co., New- ark, N. J.
Parakote	Moistureproof coated pack-	Lancaster, O. Menasha Products Co., Men-		Methyl methacrylate mold- ing compound	Röhm & Haes Co., Phila., Pa.
Paramount	aging papers General	asha, Wis. Paramount Paper Products Co.,	Pli-Fest Plio	Sealing tapes Pliofilm ribbon	Rexford Paper Co., Milwaukee, Wis.
Paraply		Inc., Phila., Pa. Menasha Products Co., Men-			Freydberg BrosStrauss, Inc., New York, N. Y.
Paraply	bakery packages Moistureproof and grease- proof laminated cartons	Div. Marathon Paper Mills	Pliofilm	Rubber-hydrochloride sheet- ing Transparent sheeting	The Goodyear Tire & Rubber Co., Akron, O. The Goodyear Tire & Rubber
Parawax	All coated moistureproof	Co., Menasha, Wis. Paramount Paper Products Co.,	Pliotite	Coating material	Co., Akron, O. The Goodyear Tire & Rubber
Parchkin	bags Vegetable parchment for art	Inc., Phila., Pa. Paterson Parchment Paper Co.,	Pliolite	Moistureproof liquid casting	Co. Akron, O. The Goodyear Tire & Rubber
Parchstone	printing Greaseproof innerwrap	Bristol, Pa. Rhinelander Paper Co., Rhine-	Plio-Ribbon	Printed pliofilm ribbon	Co., Akron, O.
Parkay	Woodgrain box papers	lander, Wis. Hazen Paper Co., Holyoke,	Pliosuede	Velour pliofilm	Freydberg BrosStrauss, Inc., New York, N. Y. Cellusuede Products, Inc.,
Parkwood Textolite	Impregnated wood plastic	Mass.	Plio-Tye	Plastic coated material made	Rockford, III.
Parquet	material Wood grain (imitation) box	Dept., Pittsfield, Mass.	Plyglass	of Pliofilm Multi-ply laminated glassine	New York, N. Y. Deerfield Glassine Co., Mon-
Parquette	covers Box covering paper	Mills Inc., Washington, D. C.	Ply-Metal	Foil containers	roe Bridge, Mass. Reynolds Metals Co., Rich-
Parry	Paper box machinery	Chas. W. Williams & Co., Inc., New York, N. Y. Samuel R. Parry Mach. Co., Inc.,	Plymouth	Paper drinking cups	mond, Va. The American Paper Goods
Pastel Creations	Paper for box coverings	Rochester, N. Y.	Pneumatic	Packaging and bottling equip-	Co., Kensington, Conn. Pneumatic Scale Corp., Ltd.,
Patapake	A white paper for printing	Pejepscot Paper Co., New York, N. Y. Paterson Parchment Paper Co.,	Pocono	ment Box cover paper	No. Quincy, Mass. Matthias Paper Corp., Phila.,
Patapar	and packaging	Bristol, Pa. Paterson Parchment Paper Co.,	Polymerin	Quick-bake enamel finish	Pa. Ault & Wiborg Corp., New
Patawite	Genuine vegetable parch- ment A 9-lb. manifold	Bristol, Pa. Paterson Parchment Paper Co.,	Pony	Small table gluers	York, N. Y. New Jersey Machine Corp.,
aterson		Bristol, Pa. Paterson Parchment Paper Co.,	Pony Gummer	Table gummer	Hoboken, N. J.
axerson	Genuine vegetable parch- ment	Bristol, Pa. Ameri-an Lace Paper Co., Mil-	Pony Labelrite	Semi-automatic labelers	New Jersey Machine Corp., Hoboken, N. J. New Jersey Machine Corp.
ee Gee	Padding	waukee, Wis.	Popular Priced	Box covering paper	Hoboken, N. J. Chas. W. Williams & Co., Inc.,
eerless	Reducing and non-scratch ink compounds	Pope & Gray, Inc., New York, N. Y. Peerless Roll Leaf Co., Inc.,	Porcell	Containers, molded pulp	New York, N. Y. American Lace Paper Co., Mil-
eerless	Stamping presses Roll leaf Infolding gluing machine	Union City, N. J. E. G. Staude Mfg. Co., St.	Porthos	Cover paper	waukee, Wis. United Mfg. Co., Springfield,
eerless	Label gummers	Paul, Minn. U. S. Bottlers Machinery Co.,	Port Low	Portable gravity sections	Mass. The Alvey-Ferguson Co., Cin-
ellette	_	Chicago, III. Kupfer Bros. Co., New York,	Postage-Meter	Postage metertape	cinnati, O. Gummed Tape & Devices Co.,
energette	Box paper Box paper	N. Y. Kupfer Bros. Co., New York,	Postalett	Pocket letter scales	Bklyn, N. Y. The Exact Weight Scale Co.,
enescope	Penetration tester	N. Y. Thwing-Albert Instrument Co.,	Pour-Aid	Liquor pourer	Columbus, O. Lanfare Molded Products, To-
erfect Circle Plates	_	Phila., Pa.	Pour-N-Seal	Initial and re-sealing cap with	ledo, O.
erfection	Engravings	Champlain Div., Interchemical Corp., New York, N. Y. Royal Paper Corp., New York,	7 081-11-0681	lever and pouring spout	Continental Can Co., New York, N. Y. The Crown Cork & Seal Co.,
erfection	Box covering papers Medicinal glassware	N. Y. Pennsylvania Glass Products		\$	Baltimore, Md. Williams Sealing Corp., Deca-
erfect-O-Cut	Labels and seals	Co., Pittsburgh, Pa. The Tablet & Ticket Co., Chi-	Powrweld	Foot power bag crimper	tur, III. Cleveland Crimping Press Co.,
erfecto Pac	Pie collar	cago, III. Milprint, Inc., Milwaukee, Wis.	Precision	Medicinal droppers	Cleveland, O. Pennsylvania Glass Products
ermoffex	Padding glue	The F. G. Findley Co., Milwau- kee, Wis.	Pressit	Liquid dispensers	Co., Pittsburgh, Pa. The Food Dispenser Co.,
etite Moire	Embossed mica paper	Hazen Paper Co., Holyoke, Mass:	Presto	Box and label printing ma-	Hartford, Conn. Markem Machine Co., Keene,
hantom	Embossed box papers	Hazen Paper Co., Holyoke, Mass.	Price It	chines Stock design cellophane bags	N. H. Food Packaging, Div. of Mil-
hantom-Lite	Displays with flashers	Reynolds Metals Co., Richmond, Va.	Print-Ad-String	Cotton tape and twine	print, Inc., Milwaukee, Wis. Chicago Printed String Co.,
henix	Glass bottles	Armstrong Cork Co., Lancaster,	Printfold	Transparent containers	Chicago, III. Printloid, Inc., New York,
hoenix	Band cap	Phoenix Metal Cap Co., Chi-	Print-O	Waxed wrapping paper	N. Y. Kalamazoo Vegetable Parch-
hotomailer	Cone top can Mailing envelopes	cago, III. Hinde & Dauch Paper Co.,	Printweigh	Electric weight-printer	ment Co., Kalamazoo, Mich. Toledo Scale Co., Toledo,
lifer-Proof	Bottle closure	Sandusky, O. Aluminum Seal Co., New Ken-	Pris-O-Matic	Easy loading "Cellophane"	O. The Dobeckmun Co., Cleve-
in Stripes	Box covering paper	sington, Pa. Chas. W. Williams & Co., Inc.	Proclucer	bags Wrappers	land, O. Gellman Mfg. Co., Rock Island,
intex	Printed box paper	New York, N. Y. The Marvellum Co., Holyoke,	Protectall	Fibreboard and corrugated	III. Container Corp. of America,
ique	Embossed mica paper	Mass. Hazen Paper Co., Holyoke,		board boxes	Chicago, III.
ique Embossed	Box covering paper	Mass. Holyoke Card & Paper Co.,	Protectopac Protek-Sorb	Specialty wraps Adsorption for elimination of	Milprint, Inc., Milwaukee, Wis. The Davis Chemical Corp., Silica Gel Dept., Baltimore,
laid Sheen	Embossed mica paper	Springfield, Mass. Hazen Paper Co., Holyoke,	Protekanak	Moisture absorbent chemical	Md.
fanet	Sealing tapes	Mass. McLaurin-Jones Co., Brook-	Protek-sorb	Moisture absorbent chemical	Davison Chemical Corp., Bal- timore, Md. Central States Paper & Bag Co.
		field, Mass.	Protektar	Moth repellent paper	St. Louis, Mo.
Maskon .	Urea formaldehyde molding compound	Plaskon Co., Inc., Toledo, O.	Protektol	Industrial finishes	Ault & Wiborg Corp., New York, N. Y.

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Protex	Padding	American Lace Paper Co., Mil-	Reel-Hide	Box cover paper	Matthias Paper Corp., Phila.
Protinol	Label adhesive	waukee, Wisc.	Reel-Pak	Fibre film boxes	Pa. Gaylord Container Corp., St
		The Fales Chemical Co. Inc., Cornwall Landing, N. Y.			Louis, Mo.
Proxmelts	Molten coatings (melts)	Pyroxylin Products Inc., Chi- cago, III.	Reflectone	Flint glazed papers	Wyomissing Glazed Paper Co. Reading, Pa.
Proxmesh	Closed mesh fabrics	Pyroxylin Products Inc., Chi- cago, III.	Reilly Indur	Molding powders & phenol- formaldehyde resins, var-	Reilly Tar & Chemical Corp. Indianapolis, Ind.
Prystal	Clear cast phenolic plastic	Catalin Corp., New York, N Y.	Reindeer	nishes, etc. Fancy paper	Louis Dejonge & Co., Nev
Type	Liquid bottling machine	Karl Kiefer Machine Co., Cin- cinnati, O.	Renaissance	Embossed mica paper	Hazen Paper Co., Holyok
Pure-Cone	Paper bottle	Sutherland Paper Co., Kalama- zoo, Mich.	Renicote	Metallic printing stock for	Mass. Reynolds Metals Co., Rich
ure Pail	Ice cream package	Bloomer Bros. Co., Newark, Wayne Co., New York State.	Repaco	box covering Wrappers—indented inner	mond, Va. The Republic Paperboard Co
Pure Pak	Milk containers	Francisco, Calif.	Reptile	and outer wraps fancy paper	Cincinnati, O.
Pure Pak	Milk blanks	Gardner-Richardson Co., Mid- dletown, O.			Louis Dejonge & Co., Ne. York, N. Y.
Pure-Pak	Paper milk containers	American Paper Bottle Co., Toledo, O.	Re-Seal-It	Re-sealing bottle caps	Reynolds Metals Co., Rich mond, Va.
Puritan	Paper drinking cups	The American Paper Goods	Resinox	Phenolic molding compound resins	Monsinto Chemical Co., Pla tics Div., Springfield, Mass.
Puritan	Milk blanks	Co., Kensington, Conn. Gardner-Richardson Co., Mid-	Revelation	Cellophane wrappers and bags	Nilprint Inc., Nilwaukee, Wi
Puro Pak	Poultry box lining waxed	dletown, O. Central Waxed Paper Co., Chi-	Revolving Merchandiser	Electric turntables	Motion Displays, Inc. Bklyn N. Y.
Purse Kit	Cosmetic kit	cago, III. Colt's Patent Fire Arms Mfg	Rex	Chains and conveyors	Chain Belt Co., Milwaukee Wis.
Pyralin	Cellulose nitrate (pyroxylin)	Co., Hartford, Conn. E. I. du Pont de Nemours & Co.,	Reyco	Metal bottleneck wraps	R ynolds Metals Co., Rich mond, Va.
Pyralon	Box paper	Inc., Arlington N J. The Marvellum Co., Holyoke,	Reycraft	Corrugated decorative dis- play papers and boards	The Reyburn Mfg. Co., Inc. Phila., Pa.
	Box paper	Mass.	Reycurv	Corrugated decorative dis- play papers and boards	The Reyburn Mfg. Co., Inc. Phila. Pa.
Pyrette		Kupfer Bros. Co., New York, N. Y.	Reydec	Corrugated decorative dis-	The Reyburn Mfg. Co., Inc
Pyrex	Corning glass products	Corning Glass Works, Corning, N. Y.	Reyflute	play papers and boards Corrugated decorative dis-	Phila., Pa. The Reyburn Mfg. Co., Inc.
Pyrodescent	Iridescent or pearl papers	Pyrotex Leather Co., Leomin- ster, Mass.	Reytone	play papers and boards Corrugated decorative dis-	Phila., Pa. The Reyburn Mfg. Co., Inc
Pyro-Seal	Pyroxylin metallics board stock	Bradner Smith & Co., Chicago, III.	Reytrim	play papers and boards Corrugated decorative dis-	Phila., Pa. The Reyburn Mfg. Co., Inc
Pyro Sheen	Pyroxylin coated papers	Pyrotex Leather Co , Leomin- ster, Mass.	Rhomboid	play papers and boards Display carton	Phila., Pa. Robert Gair Co., Inc., Ne
Pyroxcote	Lacquers	Pyroxylin Products Inc., Chi- cago, III.	Ribbon and Pine		York, N. Y. Louis Dejonge & Co., Ne
		cago, m.		Fancy paper	York, N. Y.
Quick	Printing inks, lithographic	International Printing Ink, Div.	Ribbonette	Fancy tying material	Chicago Printed String Co Chicago, III.
Guick	supplies	Interchemical Corp., New York, N. Y.	Rib-Sheen	Embossed mica paper	Hazen Paper Co., Holyok Mass.
Quick Pac	Cracker caddy	Robert Gair Co., Inc., New York, N. Y.	Richleaf Gold and Platinum	Casein metallic coated papers	Hampden Glazed Paper & Ca Co., Holyoke, Mass.
Quick-Set Compound	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp.,	Ridgelo	Clay coated, metallic coated, brush finish, laminated box-	Lowe Paper Co., Ridgefiel N. J.
Quikseal	Closure	Bronx, N. Y. Owens-Illinois Glass Co., To-	Riegeline	boards Transparent glassine	Riegel Paper Corp., New Yor
Quik-Set	Folding carton	ledo, O. Robert Gair Co., Inc., New	Riegelite	Transparent waxed glassine	N. Y. Riegel Paper Corp., New Yor
Guin-Set	rolang carton	York, N. Y.	Rimseal	Vacuum and hermetic tum-	N. Y. The Aridor Co., Chicago, III
			Ripco	bler closure Greaseproof paper	Rhinelander Paper Co., Rhin
R-60 Single Edger	Machine, beading straight		Ripco Auto-Pak	Greaseproof innerwrap	lander, Wis. Rhinelander Paper Co., Rhin
R-70 Duplex Edger	edge of plastic sheet Machine for beading two	Wanda, N. Y. Taber Instrument Co., N. Tona-	Riplette	Box paper	lander, Wis. Kupfer Bros. Co., New Yor
D 70 Single Edges	parallel edges of plastic strips	wanda, N. Y. Taber Instrument Co., N. Tona-	Ripple	Box cover	N. Y. District of Columbia Pap
R-70 Single Edger	Machine for beading straight edge of plastic sheet	wanda, N. Y.			Mills Inc., Washington, D.
Redient	Embossed paper—not coated	Hampden Glazed Paper & Card Co., Holyoke, Mass.	Ripplekraft	Stretchable wrapping paper	Angier Corp., Framingha Mass. Chas. W. Williams & Co., Inc
Rainbow	Paper for box coverings	Pejepscot Paper Co., New York, N. Y.	Rippletone	Box covering paper	New York, N. Y.
Rainbow	Flint paper	Bradner Smith & Co., Chicago, III.	Rippl'Tie	Fancy tying material	Chicago Printed String Co
Rainbow	Reinforced cellophane bags	The Munson Bag Co., Cleve- land, O.	Rite-Price	Stock printed cellophane bags	The Dobeckmun Co., Clev land, O.
Rainbow	Box Covering Paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Rite-Way	Bags and wrapping paper	Gaylord Container Corp., Louis, Mo.
Rapid-Wheel	Portable conveyor	Rapids Standard Co., Inc.,	RO	Closure	Aluminum Seal Co., New Ke sington, Pa.
Rarewood	Woodgrain box papers	Grand Rapids, Mich. Hazen Paper Co, Holyoke	Rockette	Box paper	Kupfer Bros. Co., New Yo N. Y.
Rayette	Box paper	Mass. Kupfer Bros. Co., New York,	Roll-Rite	Rolling pin	Owens-Illinois Glass Co., T
Rayon	Mica coated and embossed	N. Y. The Marvellum Co., Holyoke,	Rose	Display box	ledo, O Morris Paper Mills, Chicas
Rayon-Bow	Papers Rayon ties	Mass. Fibre Cord Co., New York, N. Y	Rotery "X"	Web rotary tape press	III. Package Sealing & Label C
Ray-Rib	Rayon ribbon	N. Y Fibre Cord Co., New York,	Rolokits	Containers for spices, herbs	New York, N. Y. Gutterson & Co., Inc., No
R.C.Chip	Super finish chip board	Fibre Cord Co., New York, N. Y. The Butterfield-Barry Co., New	Rolopague	and salts Printing process for transpar-	York, N. Y.
Really Fla	Gummed papers	York, N. Y. Mid-States Gummed Paper Co.,		ent film	land, O.
		Chicago, III.	Roto Prints	Metallic box covering paper	Springfield, Mass.
Red Core	All products	Rexford Paper Co., Milwaukee, Wis.	Rotoseal	Carton forming, lining, fold- ing, closing, machine	Middletown, O.
Red Diamond	Bottle washer and filler	The Liquid Carbonic Corp., Chicago, III.	Roverseals—RO	Roll-on tamperproof over standard roll-on	Aluminum Seal Co., New Ke sington, Pa.
Reddirap	Greaseproof wrap for liners, etc.	Riegel Paper Corp., New York, N. Y.	Royal	Protective milk bottle hoods	mond, Va.
Redington	Packaging and cartoning ma- chines		Royal Satin	Super finish news board	The Butterfield-Barry Co., In New York, N. Y.
Red Stripe	Extra heavy box cambric	Rexford Paper Co., Milwaukee,	Royal Satin	Quality newsboard for qual-	

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R.T.G.	Folding cartons and displays	The Richardson Taylor-Globe	Seal-Tye	Combination pasted and	Consolidated Packaging M
Rushtec	Imitation English grass paper	Corp., Cincinnati, O. Paper Affiliates Co., Inc., New York, N. Y.	Seals	metal tie closure Thermoplastic rubber com- pounds	chinery Corp., Buffalo, N. Y Dispersions Process, Inc., New York, N. Y.
			Sebrof	Poster making process	The Forbes Lithograph Mf. Co., Boston, Mass.
& S	Filling, packaging, wrapping paper box machines	Stokes & Smith Co., Frankford, Phila., Pa.	See-Thru	Rigid transparent container	Geo. V. Clark Co., Inc., Lor Island City, N. Y.
afedge af-Eg	Tumblers Cushion bottom egg carton	Owens-Illinois Glass Co., To- ledo, O. Sutherland Paper Co., Kalama-	Self-Locking	Egg carton	Self-Locking Carton Co., Ch cago, III.
afe Myx	Spray solution	zoo, Mich. Triangle Ink & Color Co. Inc.,	Self Seal	Open end envelopes	U. S. Envelope Co., Spring field, Mass.
afe Pack	Automatic egg carton	Bklyn., N. Y. Grant Paper Box Co., Pitts-	Sell-O-Face	Cellophane window bags and wraps	Thomas M. Royal & Co., Phila Pa.
ifetex	Gummed kraft paper sealing	burgh, Pa. Central Paper Co., Menasha,	Sell-O-Royal	Cellophane bags and sheets	Thomas M. Royal & Co., Philipa.
sfetex	Carton for textile products	Wis. Shuttleworth Carton Co., Inc., New York, N. Y.	Selmor	Display stands	Hinde & Dauch Paper Co Sandusky, O.
afe-T-Seal	Sealing tape	Rexford Paper Co., Milwaukee, Wis.	Semi-Seal	Cellophane glued to back- board	Milprint, Inc., Milwaukee, W
afety-Seal	Mailing boxes	W. H. Deisroth Co., Inc., Phila., Pa.	Sentry-Seal	Closure	Owens-Illinois Glass Co., T ledo, O.
sleway	Counter rolls of cellophane and roll cutters	Safeway Products Corp., New	Serpette	Box paper	Kupfer Bros. Co., New Yor N. Y.
affex	Safety glass plastic, vinyl ace- tal	York, N. Y. Monsanto Chemical Co., Plas- tics Div., Springfield, Mass.	Seybold	Paper cutters	Harris-Seybold-Potter Co., Da ton, O.
ef-T-Loid	Cellulose acetate boxes	Parfait Powder Puff Co., Chi- cago, III.	Seybold Precision	Die presses	Harris-Seybold-Potter Co., Da ton, O.
. Albans	Colored design papers	Stevens-Nelson Paper Corp., New York, N. Y.	Seymour Shadotone	Decorated metal containers Printing ink	Seymour Products Co., Se mour, Conn. Sigmund Ullman Co., Div. Ge
. Valentine	Box paper	Kupfer Bros. Co., New York, N. Y.	Siladotolie	Frincing link	eral Printing Ink Corp Bronx, N. Y.
iles Appeal	Package inserts	Stecher-Traung Lithograph Corp., Rochester, N. Y. Paramount Paper Products Co.,	Shadowgraph	Overweight - underweight scales	
elespeckage	All coated moistureproof bags Glass containers	Inc., Phila., Pa. Owens-Illinois Glass Co., To-	Shadowplaid	Fancy paper	Louis Dejonge & Co., Ne York, N. Y.
ndalwood	Imitation wood grain box	ledo, O. District of Columbia Paper	Sheer Sheen	Mica box papers	Hazen Paper Co., Holyol Mass.
ni-Glas	covers Processed sterilized prescrip-	Mills Inc., Washington, D. C. Brockway Glass Co., Inc.,	Sheffield Process	Collapsible tubes	New England Collapsible Tu Co., New London, Conn.
niseal	tion bottles Metal milk or water caps	Brockway, Pa. Ferdinand Gutmann & Co., Bklyn, N. Y.	Sheipco 4 Star	Silver chests for packaging silverware	Henry H. Sheip Mfg. C Phila., Pa.
ni-Sherm	Fluted liners	Sherman Paper Products Corp.,	Shellback	Double shell caps	Anchor Hocking Glass Con Lancaster, O.
nitair	Double action air cleaner	Newton Upper Falls, Mass. U. S. Bottlers Machinery Co., Chicago, III	Shell-Tint	Transparent tint over portions of transparent cellulose	Shellmar Products Co., Mt. V.
nitape nitape-Sealtite	Tablet packager Heat sealed, unit packages of	Chicago, III. Ivers-Lee Co., Newark, N. J. Ivers-Lee Co., Newark, N. J.	Shell-Glo	Clear transparent laminated	Shellmar Products Co., M
ni-Trete	tablets, capsules, pills Condiment dispensers	Imperial Molded Products	Shell-Pax	cellulose Transparent cellulose con-	
ren	Vinylidene chloride molding	Corp., Chicago, III. The Dow Chemical Co., Mid-	Shell-Pli	tainers Printed laminated cellulose	Vernon, O. Shellmar Products Co., A
fenec	Bag sealers, & stitching ma-	land, Mich. Saranac Industries, Benton Har-	Shell-Vue	Transparent gummed acetate posters	Vernon, O. Shellmar Products Co., A Vernon, O.
teen	Mica embossed	bor, Mich. Hampden Glazed Paper & Card Co., Holyoke, Mass.	SHH	Single head cappers	U. S. Bottlers Machinery C Chicago, III.
tinettes	Box paper	Kupfer Bros. Co., New York, N. Y.	Shoksorb	Indented packing paper	Schmidt & Ault Paper C York, Pa.
tin-Glo	Display fabric	Corp Columbus O	Showbox	Rigid containers	Central States Paper & Bag Co St. Louis, Mo.
tinteen	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Showmaster	Electric turntables	Motion Displays, Inc., Bkly N. Y.
tintone tinwood	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Shy-Nee	Printing inks, lithographic supplies	International Printing Ink, D Interchemical Corp., Ne
ve-A-Seal	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Signodes	Steel strapping	York, N. Y. Signode Steel Strapping Co
otch Cellulose	Collostere	Owens-Illinois Glass Co., To- ledo, O.	Silica Gel	Moisture absorbent chemical	Chicago, III. Davison Chemical Corp., B. timore, Md.
otch fabrics	Cellophane tape Box covering paper	Minnesota Mining & Mfg. Co., St. Paul, Minn.	Silk Sheen	Box covering paper	Chas. W. Williams & Co., In New York, N. Y.
otch Plaids	Paper for box coverings	Chas. W. Williams & Co., Inc., New York, N. Y. Peiepscot Paper Co., New	Silray	Silver coated paper	The Marvellum Co., Holyol Mass.
otchweave	Box covers	Pejepscot Paper Co., New York, N. Y. District of Columbia Paper	Silvalum	Silver embossed paper	Springfield Coated Pap Corp., Camden, N. J.
ott	Net weighing machines	Mills Inc., Washington, D. C. U. S. Automatic Box Machinery Co., Inc., Roslindale, Bos-	Silveneer	Printing inks	Sigmund Ullman Co., Div. Ge eral Printing Ink Cor Bronx, N. Y.
uff-Proofed	Box covering paper	ton, Mass. Chas, W. Williams & Co., Inc.,	Silver Beams	Box covering paper	Chas. W. Williams & Co., In New York, N. Y.
uf-Pruf	Box cover paper	New York, N. Y. Matthias Paper Corp., Phila.,	Silver Foil 1941	Metallic coated, silver, plain and embossed	Louis Dejonge & Co., Ne York, N. Y.
uten	Waterproof paper	Pa. Union Bag & Paper Corp., Scutan Div., New York,	Silvergloss	Silver print paper	The Marvellum Co., Holyok Mass.
afoem	Box covering paper	N. Y. Chas. W. Williams & Co., Inc.,	Silver King	Box covering paper	Chas. W. Williams & Co., Inc. New York, N. Y.
al Brand	Adhesives	New York, N. Y. Philadelphia Quartz Co.,	Silverlink Silver Mosaic	Roller chain Brightwood kid finish papers	Link-Belt Co., Chicago, I Holyoke Card & Paper Co
alcone	Paper container	Phila., Pa. American Sealcone Corp.,	Silver Plaid	Box covering paper	Springfield, Mass. Chas. W. Williams & Co., Inc
-All	Jars and bottles	New York, N. Y. Owens-Illinois Glass Co., To-	Silverseal	Colored specialty tape	New York, IV. Y. Gummed Tape & Devices Co
ral-Spout	Aluminum pouring spout	ledo, O. American Aluminum Ware Co.,	Silversheen	Printing ink	Bklyn, N. Y. Sigmund Ullman Co., Di General Printing Ink Corp
raltite	Paper bag sealers	Newark, N. J. Consolidated Packaging Machinery Corp., Buffalo, N. Y.	Silverstitch	Stapling wire	Bronx, N. Y. Acme Steel Co., Chicago, III
raltight	Bag closing machine	Miller Wrapping & Sealing Ma- chine Co., Chicago, III.	Silverstitcher Silverstreak	Stitching machine Silent chain	Acme Steel Co., Chicago, I Link-Belt Co., Chicago, I
ealtite-Uniwrap	Individual label attached package	Ivers-Lee Co., Newark, N. J.	Silvertone	Box covering paper	Chas. W. Williams & Co., Inc New York, N. Y.

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS	TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Silvertone	Metallized cellulose ribbon	Fibre Cord Co., New York, N. Y.	Sta-Fresh	Waxed glassine bags	Oneida Paper Products, Inc.,
Sil-Vor-Plate	Aluminum bronze ink	N. Y. Geo. H. Morrill Co., Div. General Printing Ink Corp., New York, N. Y.			Oneida Paper Products, Inc., New York, N. Y.; also Con- tinental Bag Specialties Corp., New York, N. Y.
Simplex	Folding and display carton	New York, N. Y. Paper Package Co. Indianapo-	Stainless	Metal foils	Keller-Dorian Paper Co., New York, N. Y.
	Wire staples	lis, Ind. Acme Staple Co., Camden,	Standard	Labeling machine and acces- sories	Liquid Carbonic Corp., Chi- cago, III.
Simplex		N. J.	Stapak Drum	Fibre drum	The Container Co., Van Wert
Simplex Simplex	Pie and cake container Folding paper boxes	Milprint, Inc., Milwaukee, Wis. Simplex Paper Box Corp., Lan- caster, Pa. Miller Wrapping & Sealing Ma-	Staplecraft Star	Hand, foot, motorized sta- pling machines Adhesive	Acme Staple Co., Camden N. J. Bingham Bros. Co., New York
Simplex Hi-Speed	Bag making machine	chine Co., Chicago, III.	Star Brand	Liquid adhesives	N. Y. Bingham Bros. Co., New York
Single	Labeling machines & acces- sories	The Liquid Carbonic Corp. Chicago, III.	Stardust	Box covering paper	N. Y. Chas. W. Williams & Co., Inc.
Single Plate	Filter	Karl Kiefer Machine Co., Cincinnati, O.	Star Sheen	Embossed mica paper	New York, N. Y Hazen Paper Co., Holyoke
Singletin	One-use collapsible tube	Victor Metal Products Corp., Bklyn, N. Y.	Star and Step	Box covers	Mass.
Singl-Vu	Window cartons	Rossotti Lithographing Co., Inc., N. Bergen, N. J.	Staystuk	Center spot crowns	District of Columbia Pape Mills Inc., Washington, D. C Ferdinand Gutmann & Co Bklyn, N. Y.
Skytogen	Box paper	Kupfer Bros. Co., New York, N. Y.	Staytite		Bklyn, N. Y. Bradner Smith & Co., Chicago
Skytone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.		Gummed stay tape	111.
Slak-Tite	Closure for slack filled paper	Consolidated Packaging Ma- chinery Corp., Buffalo, N. Y.	Steelbelt Steelstrap	Conveyor belting Steel strapping	Acme Steel Co., Chicago, III. Acme Steel Co., Chicago, III. The Interstate Folding Box Co.
Slant Side	Sloping side folding box	Michigan Carton Co., Battle Creek, Mich.	Sterillined	Inner lined containers	Middletown, O.
Smart Set	Salt and pepper shakers	Owens-Illinois Glass Co., To-	Sterling Tread	Gummed paper tape	The Gummed Products Co. Troy, O.
Smithcrafted	Metal wood leatherette	ledo, O. The S. K. Smith Co., Chicago,	Stikfast	Label pasters	Diagraph-Bradley Stencil Ma chine Corp., St. Louis, Mo. Stark Bros. Ribbon Corp., Nev
Snac-Pak	boxes and displays Corrugated basket container	III. The Ashtabula Corrugated Box	Streamer Bows	Pre-tied cellulose bows	York, N. Y.
Snake Tape	for cakes Gummed wrapping tape	Co., Ashtabula, O. Angier Corp., Framingham,	Stretchrap	Wrapping machine	Stokes & Smith Co., Frankford Phila., Pa.
Snap-Loks	Attaching device embedded	Mass. Dennison Mfg. Co., Framing-	Stripe & Pine	Fancy printed Christmas	Louis Dejonge & Co., Nev York, N. Y.
_	in tag	ham, Mass. Riegel Paper Corp., New York,	Sturdite	Leather cloth	Holliston Mills, Inc., No. wood, Mass.
Snopaque	Opaque, white glassine	N. Y.	Styron	Polystyrene molding granules	The Dow Chemical Co., Micland, Mich.
Snowcap	Lining	Bradner Smith & Co., Chicago,	SUco	Printing ink	Sigmund Ullman Co., Div. Ger
Snowdrift	Greaseproof paper	Rhinelander Paper Co., Rhine- lander, Wis.	Suedette	F	eral Printing Ink Corp Bronx, N. Y.
Snowflake	Padding	American Lace Paper Co., Milwaukee, Wis.		Fancy paper	Louis Dejonge & Co., New York, N. Y.
Snowflake and Star	Box covering paper	Holyoke Card & Paper Co. Springfield, Mass.	Sullmanco	Printing ink	Sigmund Ullman Co., Div. Ger eral Printing Ink Corp
Snow White Litho	Box covering paper	Chas. W. Williams & Co., Inc New York, N. Y.	Sunalloy	Tin substitute for tubes	Bronx, N. Y. Sun Tube Corp., Hillside, N
Snowhite Stiktite	Box wrap	Fitchburg Paper Co., Fitchburg. Mass.	Sunburst	Wide mouth food ware	Armstrong Cork Co., Lancaste
Solac	Cellulose cement	Maas & Waldstein Co., New- ark, N. J.	Sunco	Dry colors	Sun Chemical & Color Co Div. General Printing In
Solar	Box covers	District of Columbia Paper Mills Inc., Washington, D. C.	Sunex	Transparent liquid adhesive	Corp., Harrison, N. J. American Phenolic Corp., Ch
Soldertite	Can spouts	Standard Specialty & Tube Co., New Brighton, Pa.	Sunrise	Sealing tapes	cago, III. McLaurin-Jones Co., Brook
Solidry	Inks and varnishes	Pope & Gray, Inc., New York, N. Y.	Sunshine	Box cover paper	field, Mass. Matthias Paper Corp., Phila
Sonsettes	Box paper	Kupfer Bros. Co., New York. N. Y.	Sunshine	Box paper	Pa. Bradner Smith & Co., Chicago
Sorbolite	Light proof board	Waldorf Paper Products Co.,	Super Cell	Egg cartons (2 x 6)	III. The Interstate Folding Box Co
Sorting Scale	Automatic continuous check-weighing and sort-	St. Paul, Minn. Merrick Scale Mfg. Co., Pas- saic, N. J.	Super Cell 2-in-1	Egg carton	Middletown, O. The Interstate Folding Box Co Middletown, O.
Spede-Pac	ing scale ice cream pail	Bloomer Bros. Co., Newark, Wayne Co., New York State	Super-Gloss	White ivory embossed and plain papers	Mass.
Speediseal	Tablet tape	Gummed Tape & Devices Co.,	Superkleen	Bottle washers	The Liquid Carbonic Corp. Chicago, III.
Speed-Limit	Printing inks	Bklyn, N. Y. International Printing Ink Div. of	Superseal	Heat sealing glassine	Hartford City Paper Co., Har
		Interchemical Corp., New York, N. Y.	Super Seal	Printed bread wrappers	Menasha Products Co., Menasha, Wis.
Spee-D-Mark	Cellulose bags	U. S. Envelope Co., Spring- field, Mass.	Super-Seal	Leakproof cellophane bags	Munson Bag Co., Cleve land, Ohio.
Speedweigh	packing operations	Toledo Scale Co., Toledo, O.	Super-Seal	Glass vacuum jar	Super-Seal Container Corp. Washington, D. C.
Speed-Wrap	Automatic sheeting and glu- ing machine	Machine Co., Chicago, III.	SUperset	Printing ink	Sigmund Ullman Co., Div. Ge eral Printing Ink Corp
Speedway	Motors and display turntables	III.	Sura Shat	Wire staples	Bronx, N. Y. Acme Staple Co., Camde
Sphinx	Adhesive	Arabol Mfg. Co., New York, N. Y.	Sure Shot		N. J.
Spiralon	Flint and foil box papers	Hazen Paper Co., Holyoke, Mass.	SUtility	Printing inks	Sigmund Ullman Co., Div. Ge eral Printing Ink Core
Spongeflex	Flexible non-warp glues	Paisley Products Inc., Chicago,	SUtone	Printing inks	Bronx, N. Y. Sigmund Ullman Co., Div. Ge
Sport-Art	Fancy paper	Louis Dejonge & Co., New York, N. Y.	CIL	Date to a tella	eral Printing Ink Corr Bronx, N. Y.
Spot Lite Sprague	Glassine wrappers Canning machinery	Milprint, Inc., Milwaukee, Wis. Food Machinery Corp., Sprague-Sells Div., Hoopers-	SUveneer Sweepstakes	Printing inks Fancy paper	Sigmund Ullman Co., Div. Ge eral Printing Ink Corn Bronx, N. Y. Louis Dejonge & Co., Ne
Springtime Line	Box cover paper	ton, III. Matthias Paper Corp., Phila.,		George H. Sweetnam prod-	York, N. Y.
Spun-Sheen	Embossed mica paper	Pa. Hazen Paper Co., Holyoke,	Sweetone	ucts	Cambridge, Mass.
		Mass.	Sylphcase	Artificial transparent sausage casings	York, N. Y.
Square-Pak	Paraffined Ice cream con- tainer	Div. Marathon Paper Mills	Sylph-Flake	Sylphrap confetti	Sylvania Industrial Corp., Ne York, N. Y.
Square Sheen	Embossed mica paper	Co., Menasha, Wis. Hazen Paper Co., Holyoke,	Sylphrap	Transparent cellulose sheet- ing	 Sylvania Industrial Corp., Ne York, N. Y.
Square-Tex	Printed box paper	Mass. The Marvellum Co., Holyoke,	Sylphseal	Secondary closures—bottle bands	Sylvania Industrial Corp., Ne York, N. Y.
"S & S"	Machinery	Mass. Stokes & Smith Co., Phila., Pa.	Sylph-Thin	Artificial transparent sausage casings	Sylvania Industrial Corp., Ne York, N. Y.
Sta-Ahead	Hat stickers	Gummed Tape & Devices Co.,	Sylvania	Sylvania cellophane and	

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS TRA	DE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Synchro Ink	Printing inks, lithographic supplies	Interchemical Corp., New	tate Bags	Combination cellophane and glassine bags	Middletown, O.
Syntron	Weighing machines Vibrators and packers	Syntron Co., Homer City, Pa. Traps		Automatic packaging machine Grease resistant coating	Phila., Pa. Brooks Bank Note Co., Spring-
		Travel		Transparent cellulose sheet	field, Mass.
Tamper-Proof	Rupturing band tamper-proo	sington, Pa.		with rigid base or back Moistureproof and grease-	Vernon, O. Grant Paper Box Co., Pitts-
Tap-A-Flow	Closure dispenser	III.	Angel, Deer	proof packages Fancy-printed Christmas	burgh, Pa. Louis Dejonge & Co., New
Tappit Tarcette	Liquid dispensers Box paper	Food Dispenser Co., Hartford, Conn. Kupfer Bros. Co., New York, Tricol		papers Box paper	York, N. Y. Kupfer Bros. Co., New York,
Taylor Made	Paper boxes	N. Y.	Lock	Triple strength bottom cello-	N. Y. The Dobeckmun Co., Cleve-
Tayper	Tape moistening machine	R. I. Nashua Package Sealing Co., Triple		phane bag Closure	land, O. Owens-Illinois Glass Co., To-
T.B.aB.	Lithographed papers	Inc., Nashua, N. H. Trautmann, Bailey & Blampey, Triple		Double corrugated for pack-	ledo, O. Sherman Paper Products Co.,
		Art & Box Wrap Dept., New York, N. Y. Triple		ing Special friction top paint can	Newton Uppper Falls, Mass., Continental Can Co. New
Television	Metal and cellulose acetate cans	Geo. V. Clark Co., Inc., L. I. C., N. Y. Triple		Labeling machines	York, N. Y. The Liquid Carbonic Corp.,
Tell-U-Tags	Marking tags	Dennison Mfg. Co., Framing- ham, Mass. Tri-Se		Metal cigar wraps	Chicago, III. Reynolds Metals Co., Rich-
Tenite	Cellulose acetate molding compound	Vingsport Tenn			mond, Va.
Tenite I	Cellulose acetate molding composition	Tennessee Eastman Corp.,		Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Tenite II	Cellulose acetate butyrate molding composition	Tennessee Eastman Corp., Kingsport Tenn.		Gummed paper tape	The Gummed Products Co.
Tensolace	Ties	The Tensolite Corp., N. Tarry-		Flints and mica	Bradner Smith & Co., Chicago,
Tensolite	Artificial leather and trans- parent strippings	The Tensolite Corp., N. Tarry-		Pictorials, food—illustrations, labels and cartons	Rossotti Lithographing Co, Inc., N. Bergen, N. J.
Tensylon	Ties, solid Tensolite—covered with Tensolite	The Tensolite Corp., N. Tarry- town, N. Y.	ue	Patented window and counter displays	James Andrew DeNina, New York, N. Y.
Texol	Pyroxylin-coated fabric	Farrington Mfg. Co., Boston, Mass.	k	Satchel-bottom bags	Cupples-Hesse Envelope & Corp., St. Louis, Mo.
Texkraft Texrope	Lacquered kraft paper Multiple V-belt drive	Textileather Corp., Toledo, O. Allis-Chalmers Mfg. Co., Mil-		Key opening vacuum can	Continental Can Co., New York, N. Y. The U. S. Printing & Litho-
Textileather	Lacquered fabric	waukee, Wis. Textileather Corp., Toledo, O.	ne	Food pictorials for canned goods labels	graph Co., Cincinnati, O.
Textile Prints Textiloid	Box covering paper Lacquered rag paper	Chas. W. Williams & Co., Inc., New York, N. Y. Textileather Corp., Toledo, O.		Pictorials, food—illustra- tions, labels and cartons Ribbons and ties	Rossotti Lithographing Co., Inc., N. Bergen, N. J. The Tensolite Corp., N. Tarry-
Textolite	Compression and injection molded plastics	General Electric Co., Plastics Dept., Pittsfield, Mass. Tutone		Box covering paper	town, N. Y. Chas. W. Williams & Co., Inc.,
Thermium Thermo	Heat sealing paper and tape Tin printing inks	Seal, Inc., Shelton, Conn.	e-Sheen	Embossed mica paper	New York, N. Y. Hazen Paper Co., Holyoke,
Thermocuri	Machine, beading ends of	Pa., Phila., Pa. Taber Instrument Co., N. Tona-		Adhesives, starch derived	Mass. Stein, Hall Mfg. Co., Chicago
Thermodraw	plastic cylinders Machine, drawing containers	wanda, N. Y. Taber Instrument Co., N. Tona-		Cellophane ribbon	III. Fibre Cord Co., New York,
Thermofold	from sheet plastic	wanda, N. Y. Taber Instrument Co., N. Tond-		Label, food products	N. Y. Muirson Label Co., Inc.,
Thermoloid	plastic High relief plastic material	wanda, N. Y. Chaspec Mfg. Co., Inc., New Two W		Labels for cans and glass	Bklyn, N. Y. Muirson Label Co. Inc., Bklyn,
Thermoseal	Thermoplastic closure wraps,	York, N. Y. Benj. C. Betner Co., Devon, Pa. 2X-10		Adhesives, starch derived	N. Y. Stein, Hall Mfg. Co., Chicago,
Therm-O-Top	bags, liners	benj. C. bener Co., bevon, ra.			III.
Thin-Wrap	Bags with heat sealing appli- cation at top Wrapping machine for thin	Thomas M. Royal & Co., Phila., Pa. Miller Wrapping & Sealing U1		And tracish condition for all	Union Wadding Co., Paw-
Three in One	packages Steel strapping tightening,	Machine Co., Chicago, III.	t	versmiths	tucket, R. I.
Throway	sealing, and cutting tool No deposit, no return throw-	Conn. Anchor Hocking Glass Corp.,	ine	Printing ink	Sigmund Ullman Co., Div. Gen- eral Printing Ink Corp., Bronx, N. Y.
Ticco	away beer bottles General	Lancaster, O. Triangle Ink & Color Co., Inc., Bklyn, N. Y.	sups	Printing ink	Sigmund Ullman Co., Div. Gen- eral Printing Ink Corp., Bronx, N. Y.
ie-Tie	Gift wrappings, ribbons, seals	Chicago Printed String Co.,	1		Reynolds Metals Co., Rich-
iger Stay	Box covering paper	Chicago, III. Chas. W. Williams & Co., Inc., New York, N. Y. Unifol	d	One-piece folding garment	mond, Va. Gardner-Richardson Co., Mid-
imely Suggestions	Box paper	Kupfer Bros. Co., New York, N. Y. Union		Point-of-sale displays	dletown, O. Union Steel Products Co.,
insley	Display carton	Robert Gair Co., Inc., New York, N. Y. Uniple	x	Lug cap	Albion, Mich. National Seal Corp., Bklyn.
in Tak	Tin labeling glue	The F. G. Findley Co., Mil- waukee, Wis. Unisea		Can sealing compound	N. Y. The Max Ams Machines Co.,
iny Midget ip Off	Static eliminator Closure	The Simco Co., Phila., Pa. Owens-Illinois Glass Co., To- Unised	I-Hermo Oil-		Bridgeport, Conn. The Max Ams Machine Co
ite-Lok	Cellophane	ledo, O. Oneida Paper Products, Inc., New York, N. Y., also Continental Bag Specialties Unishe	II.	One piece cap substitute for double shell cap Special one-piece screw cap	Bridgeport, Conn. National Seal Corp., Bklyn., N. Y. Continental Can Co., New
itelok	Cylindrical paper container	tinental Bag Specialties Corp., New York, N. Y. Sutherland Paper Co., Kalama- Unitality Unitality		"One-shot" tubular con-	York, N. Y. Sun Tube Corp., Hillside,
L Type	Liquid bottling machine	zoo, Mich. Karl Kiefer Machine Co., Cin-		tainers	N. J.
one-Craft		cinnati, O. Sherman Paper Products Corp.,		card paper	United Mfg. Co., Springfield, Mass.
opcote	Moisture resistant coating	Newton Upper Falls, Mass. Brooks Bank Note Co., Spring-		Steel band freight bracing method	Acme Steel Co., Chicago, III.
opmost	Wire-handle paper pail (tin-	field, Mass. Sutherland Paper Co., Kalama-	ial	machine	Ivers-Lee Co., Newark, N. J.
opper	seal) Bottle carriers	zoo, Mich. Container Corp. of America.		Cellophane tube making ma- chine	1: (D): C : C' :
ran-Cel-Seal	Cellulose tape	Chicago, III. Gummed Tape & Devices Co Univer		Conveyor chain Bottle washers	Link-Belt Co., Chicago, III. The Liquid Carbonic Corp.,
ransel		Bklyn, N. Y. The Marvellum Co., Holyoke, Univer	sal-Kottoner	Cotton wadding machine	Chicago, III. Consolidated Packaging Ma-
ransowrap	cellulose	Mass. Transolene Co., Barrington, III. Upaco		All formulations	chinery Corp., Buffalo, N. Y. Union Paste Co., Hyde Park,
ransplastics	ing Transparent plastics process	Waterbury Button Co., Plas- U-Pres	. 14	Special opening pouring	Mass. Continental Can Co., New York, N. Y.

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS	TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
U.S.	Bottling machinery	U. S. Bottlers Machinery Co.,	Ware Super Colors	Coated box coverings	McLaurin-Jones Co., Brook field, Mass.
Utility	Small utility volumetric filler	Chicago, III. Triangle Package Machinery Co., Chicago, III.	Warnercraft	Set up and folding boxes	The Warner Bros. Co., Bridge port, Conn.
			Warnercraft	Boxes and cartons	The Warner Bros. Co., Bridge
Vacutop	Applicator closures, self feeding	Double Duty Products, Inc., Cleveland, O.	Warp-Proof	Flexible glue	port, Conn The F. G. Findley Co., Mi
Val Hue	Fused cut edge acetate rayon ribbon	Wm. E. Wright & Sons Co., West Warren, Mass.	Washington Brilliant	Box covers	waukee, Wis. District of Columbia Pape
Valvo	Collapsible tubes	National Collapsible Tube Co., Providence, R. I.	Water-Tite	Waterproof papers	Mills Inc., Washington, D. C Rexford Paper Co., Milwaukee
Vanity Line	Box cover paper	Matthias Paper Corp., Phila., Pa.	Wavee	Embossed parchment	Wis. George H. Sweetnam, Inc
Vapetex	Thermoplastic coated board	The Interstate Folding Box Co., Middletown, O.	Waxsheen	Highly transparent and glossy	Cambridge, Mass. Dixie Wax Paper Co., Inc
Vapometer	Water tester	Thwing-Albert Instrument Co., Phila., Pa.	Weavette	cake and candy wrapper Box paper	Dallas, Tex. Kupfer Bros. Co., New Yor
Vaporin	Letterpress quick drying ink	International Printing Ink Div. of Interchemical Corp., New	Weightometer	Automatic conveyor scale	N. Y. Merrick Scale Mfg. Co., Pa
Vaposeal	Glassine paper lacquer	York, N. Y. Westfield River Paper Co.,	Weklite	Coated and foil box papers	saic, N. J. Hazen Paper Co., Holyok
Vaposet	coated Moisture-set inks	Inc., Russell, Mass. International Printing Ink, Div.	Werthy	Ribbons	Mass. W-E-R Ribbon Corp., Nev
		Interchemical Corp., New York, N. Y.	Wesca	Capper	York, N. Y. Scientific Filter Co., New York
Vari-Pitch	Variable speed V-belt trans- mission	Allis-Chalmers Mfg. Co., Mil- waukee, Wis.	Whalehide	Crate liners	N. Y. Kalamazoo Vegetable Parch
Vari-Visco	Filling machine for viscous materials		Wheeling	Steel drums	ment Co., Kalamazoo, Mich Wheeling Corrugating Co
Velboard	Velour box or chip board	Cellusuede Products Inc., Rockford, III.	Whirlwind	Electric label paster and	Wheeling, Va. Scientific Filter Co., New York
Velmar	Waterproof antique coated papers	The Marvellum Co., Holyoke, Mass.	Whitehall	screw capper Dispensers	N. Y. Food Dispenser Co., Hartford
Velmat	Greeting card paper	Springfield Coated Paper Corp., Camden, N. J.	Whiz-Tape	Narrow opening tape in-	Conn. Shellmar Products Co., M
Velmo	Box paper	The Marvellum Co., Holyoke, Mass		serted beneath transparent wrappers	Vernon, O.
Velvet Chintz	Printed dull coated paper	Hampden Glazed Paper & Card Co., Holyoke, Mass.	Williamson	Adhesives	Williamson Adhesives, Inc. Chicago, III.
Versailles Satintone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Williams Stripe	Box covering paper	Chas. W. Williams & Co., Inc. New York, N. Y.
Vibrox Vichrome	Vibrating packers Industrial finishes	B. F. Gump Co., Chicago, III. Ault & Wiborg Corp., New York, N. Y.	Wind-O-Band	Cellulose bands	Armstrong Cork Co., Lancas ter, Pa. E. I. du Pont de Nemours & Co
Victoria	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.	Windoseals	Milk bottle hoods	Inc., Wilmington, Del. Reynolds Metals Co., Richmond, Va.
Victorian Floral	Fancy paper	Louis Dejonge & Co., New York, N. Y.	Winnerwite	Box cover paper	mond, Va. Matthias Paper Corp., Phila
Victor Tape	Printed advertising tape	Chicago Printed String Co., Chicago, III.	Wirestrap	Round wire strap	Pa. Acme Steel Co., Chicago, II
View Pac	Transparent bags, envelopes, rigid boxes	U. S. Envelope Co., Spring- field, Mass.	Wizard	Marking compound	Markem Machine Co., Keens N. H.
Vigorette	Box paper	Kupfer Bros. Co., New York,	Wizard Iceproof	Glue for labeling bottles	Midland Glue Products Co Detroit, Mich.
Viking	Cellulose window gluing	N. Y. E. G. Staude Mfg. Co., St.	Wiz-Wite	Paper, for box wraps and printing	Matthias Paper Corp., Phila Pa.
√inicote	Special internal coatings for	Paul, Minn. New England Collapsible Tube	Wonder	Printing inks, lithographic supplies	International Printing Ink, Div Interchemical Corp., Nev
Vinylite	collapsible tubes Transparent, translucent, or opaque plastic sheets, coated paper, molding	Co., New London, Conn. Union Carbide & Carbon Corp., New York N. Y.	Wonpreshun	Printing ink	York, N. Y. Sigmund Ullman Co., Div General Printing Ink Corp. Bronx, N. Y.
	compounds, surface coat- ing resins		Woodcraft	Woodgrain box paper	The Marvellum Co., Holyoke Mass.
Virkotype	Raised printing compounds	Wood, Nathan & Virkus Co., Inc., New York, N. Y.	Woodcraft	Box covering paper	Chas. W. Williams & Co., Inc. New York, N. Y.
/isco	Filling machine for viscous materials	Karl Kiefer Machine Co., Cin- cinnati, O.	Woodette	Box paper	Kupfer Bros. Co., New York
√isinet	Open-mesh bags	Bemis Bro. Bag Co., St. Louis Mo.	Worlbeater	Hand mixer	N. Y. Na-Mac Products Corp., Lo
/isitainer	Transparent container	Old Dominion Box Co., Charlotte, N. C.	World	Automatic labelers	Angeles, Calif. Economic Machinery Co., Wor
∕isowrap	Cellophane and paper win- dow wrapper	The Dobeckmun Co., Cleve- land, O.	World's Fair	Box covering paper	cester, Mass. Chas. W. Williams & Co., Inc. New York, N. Y.
/isuatize	Window and transparent bags	Paramount Paper Products Co., Inc., Phila., Pa.	Wrap-Ade	Bag making machinery and	Wrap-Ade Machine Co., Inc. Newark, N. J.
ol-U-Meter		The Vol-U-Meter Co., Buf- falo, N. Y.	Wrap-O-Matic	Wrapping machine for small irregular products	Modern Equipment Corp., De fiance, O.
ol-U-Meter Junior	Can filling machine	The Vol-U-Meter Co., Buf- falo. N. Y.	Wright	Paper drills and punches	Harris-Seybold-PotterCo., Day ton, O.
ortex Cups	Paper drinking cups and con- tainers	Dixie-Vortex Co., Easton, Pa.	Wun der bar	Genuine greaseproof paper	Kalamazoo Vegetable Parch ment Co., Kalamazoo, Mich
/ue Lite	Translucent plastic sheets	Monsanto Chemical Co., Plas-	"X" Base	I.I. f I	
/uepak	Rigid transparent packaging materials	tics Div., Springfield, Mass. Monsanto Chemical Co., Plas- tics Div., Springfield, Mass.		Inks for raised printing	Wood, Nathan & Virkus Co. Inc., New York, N. Y.
Vabacoat	Coated board	Container Corp. of America,	Yuletide	Box paper	Kupfer Bros. Co., New York N. Y.
Valsello	Cellophane ribbons	Chicago, III. The Walser Mfg. Co., Inc.,	Zapon	Imitation leather and coatings	Atlas Powder Co., Zapon
Vare Foils	Coated box coverings	Clifton, N. J. McLaurin-Jones Co., Brook-	Zephyr	Carton gluer	Keratol Div., Stamford, Conn E. G. Staude Mfg. Co., St
Varegold-Ware	Gold and platinum box cov-	field, Mass. McLaurin-Jones Co., Brook-	Zero-Seal	Waxed paper	Paul, Minn. The Menasha Products Co.
Varelac	erings Coated box coverings	field, Mass. McLaurin-Jones Co., Brook-	Zip Tape	Cellophane package opening	Div. Marathon Paper Mill Co., Menasha, Wis. The Dobeckmun Co., Cleveland
	•	field, Mass.		tape	O.

ALPHABETICAL LIST OF ALL MANUFACTURERS AND ADDRESSES

For location of advertisers (listed in bold-face type) see Index of Advertisers, pages 635-636

Able Machine & Tool Works, 20 West 22nd St., New York, N. V. New York, N. Y. Ace Carton Corp., 2540 S. 50th Ave., Cicero, Ill

Acme Burlap Bag Co., 42 Emerson Place, Bklyn, N. V.

N. Y. Acme Paper Box Co., 5950 State St., Chicago, Ill. Acme Printing Ink Co., 1315 W. Congress St., Chicago, Ill. Acme Staple Co., 1643–47 Haddon Ave., Camden,

N. J.
Acme Steel Co., 2834 Archer Ave., Chicago, Ill.
Addison Lithographing Co., 245 Hollenbeck St.,
Rochester, N. V.
Adler, H. M. & Co., 305 S. Sharp St., Baltimore,
Md.

Md.

Advanced Closures Corp., 46th & First Aves., Bklyn, N. Y.

Advertising Metal Display Co., 822 W. Washington Blvd., Chicago, Ill.

Aids, Inc., 1220 Broadway, New York, N. Y.

Ajax Bottle Cap Corp., 1226 Flushing Ave., Bklyn, N. Y.

N. Y. Albia Box & Paper Co., Troy, N. Y. Alderman Paper Box Corp., 31 Exchange St., Rochester, N. Y. Aldine Paper Co., 373 Fourth Ave., New York,

N. Y.
Aldrich Pump Co., The, 12 Pine St., Allentown, Pa,
Allegheny Ludlum Steel Corp., 2319 Oliver Bldg,
(22), Pittsburgh, Pa,
Allen, Arthur S., 527 Fifth Ave., New York, N. Y.
Allis-Chalmers Mfg. Co., 1126 S. 70th St., Milwaukee, Wis.
Allyue Container, Inc., 169 Franklin Ave., Bklyn,
N. Y.

N. Y. Alsop Engineering Corp., Milldale, Conn. Alton Box Board Co., Alton, Ill. Aluminum Co. of America, Gulf Bldg., Pittsburgh,

Pa.,
Aluminum Container Corp., Fulton, N. Y.,
Aluminum Goods Mfg. Co., Manitowoc, Wis.,
Aluminum Seal Co., New Kensington, Pa.,
Alvey-Ferguson Co., The, 40 Disney St., Oakley,
Cincinnati, Ohio

American Aluminum Ware Co., 368-378 Jelliff Ave., Newark, N. J.

Alvey-Ferguson Co., The, 40 Disney St., Oakley. Cincinnati, Ohio
American Aluminum Ware Co., 368-378 Jelliff Ave., Newark, N. J.
American Box Board Co., 470 Market St., Grand Rapids, Mich.
American Can Co., 230 Park Ave., New York, N. Y.
American Coating Mills, Inc., Elkhart, Ind.
American Colortype Co., 1151 West Roscoe St., Chicago, Ill.
American Cyanamid Co., Plastics Div., 30 Rockefeller Plaza, New York, N. Y.
American Decalcomania Co., 4326-38 Fifth Ave., Chicago, Ill.
American Decalcomania Co., 4326-38 Fifth Ave., Chicago, Ill.
American Excelsior Corp., 1000 N. Halsted St., Chicago, Ill.
American Hard Rubber Co., 11 Mercer St., New York, N. Y.
American Hard Rubber Co., 11 Mercer St., New York, N. Y.
American Lace Paper Co., 4425 N. Port Washington Ave., Milwaukee, Wis.
American Molded Products Co., 1753 N. Honore St., Chicago, Ill.
American Molded Products Co., 1753 N. Honore St., Chicago, Ill.
American Molding Co., 16th & Vermont Sts., San Francisco, Calif.
American Paper Bottle Co., 1813 Collingwood Blvd., Toledo, Ohio
American Paper Goods Co., The, 449 Main St., Kensington, Conn.
American Phenolic Corp., 1250 Van Buren St., Chicago, Ill.
American Phenolic Corp., 1250 Van Buren St., Chicago, Ill.
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American Phenolic Corp., 1250 Van Buren St., Chicago, Ill.
American Phenolic Corp., 1250 Van Buren St., Chicago, Ill.
American Sealcone Corp., 116 E. 27th St., New York, N. Y.
American Sealcone Corp., 116 E. 27th St., New York, N. Y.
American Tissue Mills, 12 Crescent St., Holyoke, Mass.

American Tri-State Paper Box Co., 808—17th Ave., N., Nashville, Tenn. Ames Bag Machine Co., Selma, Ala. Ames Harris Neville Co., 2800—17th St., San Francisco, Calif. Amos Harris Neville Co., 2800—17th St., San Francisco, Calif. Amos. Thompson Corp., Edinburgh, Ind. Ams, Max Machine Co., The, Scofield Ave., Bridgeport, Conn. Amsco Packaging Machinery, Inc., 31-31—48th Ave., Long Island City, N. Y. Analytical Laboratory, The, 921 Bergen Ave., Jersey City, N. J. Anchor Hocking Glass Corp., Lancaster, Ohio Andersen, A. J., 429 W. Superior St., Chicago, Ill. Anderson Box & Basket Co., Henderson, Ky. Andrews, O. B. Co., Chattanooga, Tenn. Andrews, P. L. Corp., 78th St. & Central Ave., Ridgewood Sta., Bklyn, N. Y. Angelus Paper Box Co., 751 N. Broadway, Los Angeles, Calif. Angier Corp., Framingham, Mass. Apex Paper Box Corp., 2318 S. Western Ave., Chicago, Ill. Arabol Mfg, Co., 110 E. 42nd St., New York, N. Y. Arenso Machine Co. Inc., 25 W. 43rd St., New York, N. Y. Aridor Co., The, 3428 W. 48th Pl., Chicago, Ill.

N. Y. Aridor Co., The, 3428 W. 48th Pl., Chicago, Ill. Aridye Corp. (A subsidiary of Interchemical Corp.), Fair Lawn, N. J. Arkell Safety Bag Co., 10 E. 40th St., New York, N. Y.

Armstrong Cork Co., Lancaster, Pa. Armstrong Paint & Varnish Works, 1330 S. Kil-

Armstrong Paint & Varnish Works, 1330 S. Kilbourn Ave., Chicago, Ill.

Arrow Mfg. Co. Inc., 15th & Hudson Sts., Hoboken, N. J.

Artcote Papers Inc., 380 Coit St., Irvington, N. J.

Arvey Corp., 3462 N. Kimball Ave., Chicago, Ill.

Ashtabula Corrugated Box Co., The, 3742 Ann

Ave., Ashtabula, Ohio

Athol Paper Box Co., 349 Main St., Athol, Mass.

Atlantic Carton Corp., Norwich, Conn.

Atlantic Excelsior Co., Inc., 11th Ave. & 29th

St., New York, N. Y.

Atlantic Paper Box Co., 46 Waltham St., Boston,

Mass.

Atlas Gum & Sizing Co., 406 Pearl St., New York, Atlas Powder Co., Zapon-Brevolite Div., N. Chi-

cago, Ill. Atlas Powder Co., Zapon-Keratol Div., Stamford, Conn.
Attleboro Printing & Embossing Co., Inc., 54
Union St., Attleboro, Mass.
Auburn Button Works, Inc., Auburn, N. Y.
Auld, Hampton, Inc., 104 Verona Ave., Newark,

N. J. Ault & Wiborg Corp., 75 Varick St., New York,

N. Y. Autokraft Box Co., Hanover, Pa. Automatic Scale Co., Inc., 591 Hudson St., New York, N. Y.

B

Babcock, A. H. Co., The, 43 S. Main St., Attleboro, Mass.
Babcock Box Co., Attleboro, Mass.
Badger Carton Co., 3238 N. Bremen St., Milwaukee, Wis.
Badger Merchandising Displays, Inc., 3238 N. Bremen St., Milwaukee, Wis.
Baermann, Walter, 208 Race St., Holyoke, Mass.
Baermann, Walter, 208 Race St., Holyoke, Mass.
Baggak, Inc., 220 E. 42nd St., New York, N. Y.
Bakelite Corp., 30 East 42nd St., New York, N. Y.
Baldwin, Eli & Son, Inc., 84 Wooster St., New York, N. Y.
Ball Bros. Co., Muncie, Ind.
Barger Box Co., Inc., 800 W. Beardsley St., Elkhart, Ind.
Barta-Griffin Co., 72 Commercial St., Worcester, Mass.
Bartlett Label Co., 2135 Portage St., Kalamazoo,

Mass.
Bartlett Label Co., 2135 Portage St., Kalamazoo,
Mich.
Bates Mfg. Co., The, 30 Vesey St., New York,
N. Y. Battle Creek Bread Wrapping Machine Co., Battle

Creek, Mich.
Bayer, Herbert, 19 W. 56th St., New York, N. Y.
Beck, Charles Machine Co., 13th & Callowhill Sts.,
Phila., Pa.

Bellisio, Bartolomeo, 55 W. 42nd St., New York, Bemis Bro. Bag Co., 608 S. Fourth St., St. Louis,

Mo.
Bender, H. P., 312 E. 23rd St., New York, N. Y.
Ben Mont Papers, Inc., Mill St., Bennington, Vt.
Bennett, E. W. & Co., 16th & Utah Sts., San Francisco, Calif. ennett, E. W. & Co., 16th & Utah Sts., San Fran-cisco, Calif, ensing Bros. & Deeney, 401 N. Broad St., Phila.,

Pa.

Pa. Berkowitz Envelope Co., 19th & Campbell Sts., Kansas City. Mo.

Bernardin Bottle Cap Co., Inc., 329 N. W. 4th St., Evansville, Ind.

Bernhard, Lucian, 120 E. 86th St., New York, N. Y.

Berni, Alan, 7 E. 44th St., New York, N. Y.

Bertels Metal Ware Co., Inc., 625 Rutter Ave., Kingston, Pa.

Bether, Benj C. Co., Devon, Pa.

Better, Packages, Inc. Shelton, Conn.

Better Packages, Inc., Shelton, Conn.
Bicknell & Fuller Paper Box Co., 50 Chardon St.,

Boston, Mass.
Bielefeld, Herbert Inc., 35 East Wacker Drive, Chicago, Ill.
Bingham Bros. Co., 406 Pearl St., New York, N. Y.

Chicago, III.
Bingham Bros. Co., 406 Pearl St., New York, N. Y.
Bird & Son, Inc., East Walpole, Mass.
Bisler, G. A., Inc., 5th & Brown Sts., Phila., Pa.
Blake, Moffitt & Towne, 599—8th St., San Francisco, Calif.
Bleier, Milton A., 230 Fifth Ave., New York, N. Y.
Bloomer Bros. Co., Newark, Wayne Co., New York, N. Y.
Blum, Emery & Co., Inc., 251 Fifth Ave., New York, N. Y.
Blum Folding Paper Box Co., Inc., The, 79 Bogart St., Bklyn, N. Y.
Blumenthal, Margaret, 200 Riverside Dr., New York, N. Y.
Bond Manufacturing Corp., Inc., 16th & Locust Sts., Wilmington, Del.
Boonton Molding Co., Boonton, N. J.
Bostitch, Inc., 48 Division St., East Greenwich, R. I.
Bosworth, M. M. Co., Memphis, Tenn.
Bowser-Morner Testing Laboratories, 141 Bruen St., Dayton, Ohio
Box Novelties, Inc., 729 Broadway, New York, N. Y.
Box Shop, Inc., 373 Lexington Ave., New Haven, Conn.
Brader-Sutphin Ink Co., 3800 Chester Ave., Cleve-

Conn. raden-Sutphin Ink Co., 3800 Chester Ave., Cleve-land, Ohio

land, Ohio Bradley, A. J. Mfg. Co., 101 Beekman St., New York, N. Y. Bradner Smith & Co., 333 S. Desplaines St., Chi-

Bradner Smith & Co., 333 S. Desplaines St., Chi-cago, III. Bransby & Hewitt, Inc., 521 W. 23rd St., New York, N. Y. Brass Goods Mfg. Corp., 345 Eldert St., Bklyn. N. Y.

N. Y. Breen, Fred, 6 E. 45th St., New York, N. Y. Brick & Ballerstein, 153 E. 24th St., New York. N. Y. Bridgeport Metal Goods Mfg. Co., Bridgeport,

Bridgeport Metal Goods Mtg. Co., Bridgeport, Conn.

Bridgeport Moulded Prods. Inc., 300 Myrtle Ave., Bridgeport, Conn.

Bridgeport Paper Box Co., 304 Kossuth St., Bridgeport, Conn.

Bridgeport Testing Laboratory, Inc., 675 Knowlton St., Bridgeport, Conn.

Brockway Glass Co. Inc., 1047 Seventh Ave., Brockway, Pa.

Brodton, Lynn, 7 E. 48th St., New York, N. Y.

Bronzart Metals Co., 220 Fifth Ave., New York, N. Y.

Brooks Bank Note Co., 140 Wilbraham Ave.

Brooks Bank Note Co., 140 Wilbraham Ave., Springfield, Mass.

Springfield, Mass.
Brown Bag Filling Machine Co., The, 10 Main St.,
Fitchburg, Mass.
Brown & Bailey Co., 417 N. 8th St., Phila., Pa.
Brown-Bridge Mills, Inc., The, 1937 Water St.,
Troy, Ohio
Brown Co., 404 Commercial, Portland, Me.
Bryant Electric Co., Bridgeport, Conn.
Buck Glass Co., The, 841 E. Fort Ave., Baltimore,
Md.

Md.
Buckeye Stamping Co., Marion Rd. & Parsons Ave., Columbus, Ohio
Buckley, C. E. Co., Leominster, Mass.
Buedingen, Ferdinand Co., Inc., 240 St. Paul St., Rochester, N. Y.

Buedingen, Wm. & Sons, 1500 Clinton Ave., N., Rochester, N. Y. Buffinton, F. H. Co., 363 Eddy St., Providence, R. I. Bunn, B. H. Co., 7605 Vincennes Ave., Chicago,

Burdick & Son Inc., 72 Hamilton St., Albany, N. Y. Burt, F. N. Co., Inc., 500-540 Seneca St., Buffalo, N. Y.

Burt Machine Co., 401-3 E. Oliver St., Baltimore, Md. Md. Buser Corp., P. O. Box 2020, Paterson, N. J. Bushwick Can Co., Inc., 723 Henry St., Bklyn, N.Y. Butterfield, T. F. Inc., 56 Rubber Ave., Naugatuk,

Conn.
Butterfield-Barry Co., Inc., The, 174-176 Hudson St., New York, N. Y.

Cadillac Can Co., Mary St., Mt. Clemens, Mich. California Ink Co., 545 Sansome St., San Francisco, Calif.

cisco, Calif.
California Testing Laboratories, Inc., 1429 Santa
Fe Ave., Los Angeles, Calif.
Calumet Carton Co., Harvey, Ill.
Calvert Lithographing Co., 2100 Grand River Ave.,
Detroit, Mich.

Cambridge Paper Box Co., 196 Broadway, Cambridge, Mass Cameo Die & Label Co., 154 W. 14th St., New York, N. Y.

Cameo Die & Label Co., 154 W. 14th St., New York, N. Y.

Cameron Machine Co., 61 Poplar St., Bklyn, N. Y.

Camford Machine Corp., 57 W. 19th St., New York, N. Y.

Campford Machine Corp., 57 W. 19th St., New York, N. Y.

Campbell Box & Tag Co., 903 S. Main St., South Bend, Ind.

Canister Co., The, Phillipsburg, N. J.

Cans, Inc., 3217 W. 47th Place, Chicago, III.

Capitol Printing Ink Co., Inc., 406 Channing St., N. E., Washington, D. C.

Carbide & Carbon Chem. Corp., 30 E. 42nd St., New York, N. Y.

Cardiand Corp., Evansville, Ind.

Carlson, John P. Inc., 420 Carroll St., Bklyn, N. Y.

Carrolland Paper Board Corp., Charlotte, N. C.

Carpenter Container Corp., 137–147—41st St., Bklyn, N. Y.

Cart-Lowrey Glass Co., Baltimore, Md.

Carter, Joseph, 6 N. Michigan Ave., Chicago, III.

Carter, William Co., Highland Ave., Needham Heights, Mass.

Carthage Paper Makers, Inc., Carthage, N. Y.

Cartoning Machinery Co., (See U. S. Automatic Box Machinery Co., Inc.)

Carvin Bottle Cap Corp., 1155 Manhattan Ave., Bklyn, N. Y.

Casco Paper Box Co., Inc., 68 Cross St., Portland, Me.

Casselman, T. & E. Inc., 356–362 W. 18th St., New York, N. Y.

Cavalin Corp., 1 Park Ave., New York, N. Y.

Cayalier Cap Corp., 507 Botetourt St., Norfolk, Va.

Vork, N. V. Catalin Corp., 1 Park Ave., New York, N. Y. Cavalier Cap Corp., 507 Botetourt St., Norfolk, Va. Celanese Celluloid Corp., 180 Madison Ave., New York, N. Y. Cellulose Packaging Corp., 235 E. 42nd St., New York, N. Y.

Celluplastic Corp., 50 Ave. L., Newark, N. J. Cellusuede Products, Inc., Rockford, Ill. Celon Co., 2034 Penn. Ave., Madison, Wis. Central Bag & Burlap Co., 4513 S. Western Blvd., Chicago, Ill. Central Can Co., Inc., 2417 W. 19th St., Chicago,

III.
Central Die Casting & Mfg. Co., 2935 W. 47th St., Chicago, III.
Central Fibre Products Co., 111 W. Washington St., Chicago, III.
Central Lithograph Co., The, 113 St. Clair Ave., N. E., Cleveland, Ohio
Central Paper Co., Manitowoc St., Menasha, Wis.
Central States Paper & Bag Co., 2600 N. Broadway, St. Louis, Mo.
Central Waxed Paper Co., 5659 W. Taylor St., Chicago, III.
Century Ribbon Mills, 80 Madison Ave., New York,

Chicago, Ill.
Century Ribbon Mills, 80 Madison Ave., New York, N. Y.

Chain Belt Co., 1600 W. Bruce St., Milwaukee, Wis. Chambon, L. Corp., 460 W. 34th St., New York, N. Y.

N. Y.

Champion Paper & Fibre Co., The, Hamilton, Ohio

Champlain Div., Interchemical Corp., 636—11th

Ave., New York, N. Y.

Chase Bag Co., 155 E. 44th St., New York, N. Y.

Chase Brass & Copper Co. Inc., Waterbury, Conn.

Chasen, Alex & Co., Columbia Ave. & Randolph

Sts., Phila., Pa.

Chaspec Mg. Co., 16 W. 61st St., New York, N. Y.

Chatfield Paper Co., 227 W. 3rd St., Cincinnati,

Ohio

Chatfield Paper Co., 227 W. 3rd St., Cincinnati, Ohio
Chemical Color & Supply Co., Div. General Printing Ink Corp., 547 S. Clark St., Chicago, Ill.
Chemical Paper Mfg. Co., Holyoke, Mass.
Cheron, Pierre J., 65 Locust St., Stratford, Conn.
Chesapeake Can Co., Inc., Crisfield, Md.
Chesapeake Paperboard Co., The, Baltimore, Md.
Chicago Carton Co., 4200 S. Crawford Ave., Chicago, Ill.

Chicago Gum Tape Co., 855 W. Adams St., Chicago, Ill. Chicago Molded Products Corp., 1042 N. Kolmar Ave., Chicago, Ill.

Chicago Printed String Co., 2320 Logan Blvd., Chicago, Ill.

Chipman, Richmond Lane, Jr., 1 Brunswick Rd., Montclair, N. J. Chirpe, W. Rodney, 185 N. Wabash Ave., Chicago,

Cincinnati Industries, Inc., Lockland (Cincinnati),

Cin-Made Corp., The, 801 E. 3rd St., Cincinnati, Claff, M. B. & Sons, Inc., 31 West St., Randolph,

Clark, Geo. V. Co., Inc., 42-26—13th St., Long Island City, N. Y.
Clark, J. L., Mfg. Co., Rockford, Ill.
Clarke Can Co., 124th & Fitzwater Sts., Phila., Pa.
Clarke, Rene, 247 Park Ave., New York, N. Y.
Cleveland Container Co., The, 10630 Berea Rd.,
Cleveland, Ohio
Cleveland, Ohio
Cleveland, Company Press Co., 231 Rockefeller
Bldg., Cleveland, Ohio
Clifton Paper Board Co., Clifton, N. J.
Clover Leaf Paint & Varnish Corp., 43-43 Vernon
Blvd., Long Island City, N. Y.
Clover Paper & Transparent Boxes, Inc. 4402—23rd
St., Long Island City, N. Y.
Collura, Francesco, 630 Fifth Ave., New York,
N. Y.
Coloroid Co., Inc., 1200 W. 80th St., Cleveland,

N. Y. Coloroid Co., Inc., 1200 W. 80th St., Cleveland, Colton, Arthur Co., 2602 Jefferson Ave., E., Detroit, Mich.

Colton, Arthur Co., 2602 Jefferson Ave., E., Detroit, Mich.
Colt's Patent Fire Arms Mfg. Co., 17 Van Dyke Ave., Hartford, Conn.
Columbia Box Board Mills, Inc., Chatham, N. Y. Columbia Protektosite Co., Inc., 631 Central Ave., Carlstadt, N. J.
Columbia Specialty Co., Inc., 6301 Eastern Ave., Baltimore. Md.
Columbus Coated Fabrics Corp., 1280 N. Grant Ave., Columbus, Ohio
Columbus Laboratories, The, 31 N. State St., Chicago, Ill.
Columbus Paper Box Co., Inc., 344 W. Town St. Columbus, Ohio
Columbus Plastic Products Co., Inc., 519 Dublin Ave., Columbus, Ohio
Colvell, Laurence J., 305 E. 63rd St., New York, N. Y.

Colwell, Laurence J., 305 E. 63rd St., New York, N. Y.
Comet Envelope & Paper Co. Inc., 5 E. 17th St., New York, N. Y.
Commonwealth Plastic Co., 140 Adams St., Leominster, Mass.
Compressed Paper Box Corp., 128 Thompson St., Bridgeport, Conn.
Condon, Frank, 25 Broadway, New York, N. Y.
Conneaut Can Co., Inc., Conneaut, Ohio
Connecticut Plastic Products Co., 124 N. Elm St., Waterbury, Conn.
Consolidated Box Co., Inc., 3302 N. Armenia Ave., Tampa, Fla.
Consolidated Fruit Jar Co., New Brunswick, N. J.
Consolidated Fruit Jar Co., New Brunswick, N. J.
Consolidated Lithographing Corp., 1013 Grand St., Bklyn, N. Y.
Consolidated Molded Plastics Corp., Scranton, Pa.
Consolidated Molded Plastics Corp., Scranton, Pa.
Consolidated Molded Plastics Corp., Scranton, Pa.
Consolidated Paper Box Co., 6 Vernon St., Somerville, Mass.
Consolidated Paper Co., E. First St., Monroe, Mich.

Consolidated Paper Co., E. First St., Monroe, Mich. Container Co., The, 975 Glenn St., Van Wert, Ohio, Container Corp. of America, 111 W. Washington St., Chicago, Ill.

St., Chicago, III.
Container Equipment Corp., 204-8 Riverside Ave., Newark, N. J.
Container Testing Laboratories Inc., 45 E. 22nd St., New York, N. Y.
Continental Bag Spec. Corp., Hudson River & 27th St., New York, N. Y.
Continental Can Co., 100 E. 42nd St., New York, N. Y.

ntinental Container Corp. (See Scandore Paper Box Co.)

ontinental Folding Paper Box Co., Inc., Ridge-field, N. J. field, N. J. Continental Lithograph Corp., 952 East 72nd St., Cleveland, Ohio

Continental Paper Co., Ridgefield Park, N. J. Cooper, R. G., 7376 Grand River Ave., Detroit, Mich. Cordiano Can Co., Inc., 20 Grand Ave., Bklyn,

Cornell Wood Products Co., 230 N. Michigan Ave., Chicago, Ill. Chicago, Ill.
Corning Glass Works, Corning, N. Y.
Cottoniuxe Mfg. Co., 593 E. 137th St., New York,
N. Y.

N. Y. Cottrell, C. B. & Sons Co., Claybourn Div., 3713 N. Humboldt Ave., Milwaukee, Wis. Coughlin Mfg. Co., 699 E. 132nd St., New York, N. Y.

Cournand, E. L. Inc., 285 Madison Ave., New York, N. Y. Craftsman Label Co., 120 W. 20th St., New York, N. Y. N. Y. Crawford, John W. Co., 160 Varick St., New York, N. Y.

Crescent Burlap Bag Co., 4124 Toulouse St., New Orleans, La.

Orleans, La. Crescent Ink & Color Co. of Pa., 464 N. 5th St., Phila., Pa.
Crossdale & De Angelis, Eagle & Lawrence Rds., Upper Darby, Pa.
Croce, Isabel M., 137 E. 38th St., New York, N. Y.
Crocker Union, 735 Harrison St., San Francisco, Californ Adalable.

Crocker Union, 735 Harrison St., San Francisco, Calif.
Crompton-Adelphia, John Corp., 145 W. Columbia Ave., Phila., Pa.
Crook Paper Box Co., 110–120 E. 10th Ave., N., Kansas City, Mo.
Cross Paper Products Corp., 2595 Third Ave., New York, N. Y.
Crowell Corp., The, Yorklyn, Dela.
Crown Can Co., Erie Ave. & "H" St., Phila., Pa.
Crown Cork & Seal Co., Baltimore, Md.
Crown Zellerbach Corp., 343 Sansome St., San Francisco, Calif.
Cruze, Charles, 2008 W. 7th St., Los Angeles, Calif.
Crystal Bag Co., Chickamauga, Ga.
Crystal Tissue Co., The, Middletown, Ohio
Crystal Transparent Mfg. Co., Inc., 136 W. 21st
St., New York, N. Y.
Crystal Tube Mfg. Co., 538 S. Wells St., Chicago, Ill.
Cupples-Hesse Corp., 4175 N. Kingshighway Blvd.,

Cupples-Hesse Corp., 4175 N. Kingshighway Blvd., St. Louis, Mo.

D

D'Addario, Thomas, 11 W. 42nd St., New York, N. Y.

Daniels Mfg. Co., Rhinelander, Wis. Datz Mfg. Co., 537 N. 3rd St., Phila., Pa. Davies Can Co., The, 872 E. 72nd St., Cleveland Ohio

Ohio Davies, Harry Molding Co., 1428 N. Wells St., Chicago, Ill. Cincago, III.

Davis Chemical Corp., The, Silica Gel Dept., 20
Hopkins Pl., Baltimore, Md.

Davison, George M., 50 E. 42nd St., New York,

N. Y.

cotone Products, 193 Kimball St., Fitchburg,

Deerfield Glassine Co., Monroe Bridge, Mass

Deisroth, W. H. Co., Inc., S. E. Cor. 3rd & Cambria Sts., Phila., Pa. Dejonge, Louis & Co., 161 Sixth Ave., New York, N. Y. Delta Paper Boxes, Inc., 34 Hubert St., New York, N. Y. N. Y. DeNina, James Andrew, 509 Fifth Ave., New York N. Y.

N. Y.

Dennison Mfg. Co., Framingham, Mass.
Densen-Banner Co., Ridgefield Park, N. J.
Design Center, 531 W. 52nd St., New York, N. Y.
Designers for Industry, Inc., 426 Terminal Tower,
Cleveland, Ohio
Detecto Scales, Inc., 1 Main St., Bklyn, N. Y.
Detroit Testing Laboratory, The, 554 Bagley Ave.,
Detroit, Mich.
Dewey & Almy Chemical Co., 62 Whittemore Ave.,
Cambridge, B., Mass.
Dexter Folder Co., 330 W. 42nd St., New York,
N. Y.
Diagraph, Beadlay, Speedl, Machine, Company

N. Y.
Diagraph-Bradley Stencil Machine Corp., 3745
Forest Park Blvd., St. Louis, Mo.
Diamond Press Inc., Display-Rite Div., 141 E.
25th St., New York, N. Y.
Dickerman Box Co., 36 Landsdowne St., Cambridge, Mass.
Diemolding Corp., Rasbach St., Canastota, N. Y.
Dispersions Process, Inc., 1230—6th Ave., New
York, N. Y.
Display Finishing Co., Inc., 21-16—44th, P.4

York, N. Y.
Display Finishing Co. Inc., 21–16—44th Rd.
Long Island City, N. Y.
Displayers, The 167 W. 64th St., New York, N. Y.
District of Columbia Paper Mills, Inc., Potomac &
K Sts., N. W., Washington, D. C.
Ditch, Ruth M., 813 Mart Bldg., St. Louis, Mo.
Dix, J. J. Inc., 829 E. 134th St., New York, N. Y.
Dixie-Vortex Co., 24th St. & Dixie Ave., Easton.
Pa.

Pa.
Dixie Wax Paper Co. Inc., 1300 S. Polk St., P. O.
Box 5116, Dallas, Tex.
Dobeckmun Co., The, 3301 Monroe Ave., Cleveland, Ohio
Dodge Cork Co., Inc., Lancaster, Pa.
Dohner, Donald, 12 E. 48th St., New York, N. Y.
Dorfman, A. Co., Inc., 59 W. 19th St., New York,
N. Y.

N. Y.
Double Duty Products, Inc., 6919 Lorain Ave., Cleveland, Ohio
Dow Chemical Co., The, Midland, Mich.
Driscoll, Martin & Co., 610 Federal St., Chicago,
III.

Jil.
Dumas Laboratory, The, 407 Five Ivy St. Bldg.
Atlanta, Ga.
Dunne, Liam, 413 E. 52nd St., New York, N. Y.
du Pont de Memours, E. I. & Co., Inc., 10th &
Market Sts., Wilmington, Del.
Durez Plastics & Chemicals, Inc., N. Tonawanda,
N. Y.
Durite Plastics, Inc., 5000 Summerdale Ave.,
Phila., Pa.
Du-Tone Ribbon Corp., 511 E. 72nd St., New
York, N. Y.

E

Eagle Can Co., 356 Mystic Ave., Somerville, Mass. Eagle Paper Box Co., 720 E. 11th St., New York, N. Y.

Eagle Paper Box Mfg. Co., 1755 N. Monitor Ave., Chicago, III.

Chicago, Ill.

Bagle Printing Ink Co., Div. General Printing Ink
Corp., 100 Sixth Ave., New York, N. Y.
Barlville Paper Box Co., Earlville, N. Y.
Eastern Can Co., Inc., 649 Kent Ave., Bklyn, N. Y.
Eastern Cap & Closure Corp., Baltimore, Md.
Eastman Kodak Co., Rochester, N. Y.
Eclipse Moulded Products Co., 5151 N. 32nd St.,
Milwaukee, Wis.

Economic Machinery Co., 18 Grafton St., Worcester, Mass.
Economy Novelty & Printing Co., 225 W. 39th St.,
New York, N. Y.
Eddy Paper Corp., The, 919 N. Michigan Ave.,

New York, N. Y. Eddy Paper Corp., The, 919 N. Michigan Ave., Chicago, III.

Cincago, III.

Edwards & Deutsch Lithographing Co., 2320-40
S. Wabash Ave., Chicago, III.

Eggerss O'Flyng Co., 152 Leavenworth, Omaha,
Nebr

Nebr.
Nebr.
New York, N. Y.
Bhibert Products, 844 W. Adams. Chicago, Ill.
Einson-Freeman Co. Inc., Starr & Borden Aves.,
Long Island City, N. Y.
Ekroth Laboratories, Inc., 405 Lexington Ave., New
York, N. Y.
Elletric City Box Co., Buffalo, N. Y.
Ellis, George D. & Sons, Inc., 309 N. 3rd St., Phila.,
Pa.

Pa. Empire Box Corp., 919 N. Michigan Ave., Chicago, Empire Metal Cap Co. Inc., 32—33rd St., Bklyn, Empire State Bag Co., 742 Wythe Ave., Bklyn,

N. Y. Enbee Transparent Specialty Co., 30 W. 39th St., New York, N. Y. Eppy, Samuel, Inc., 254 W. 31st St., New York, Eppy.

N. V.

Equitable Paper Bag Co. Inc., 47 00 31st Pl., Long Island City, N. Y.

Erie Resistor Corp., Erie, Pa.

Ermold, Edward Co., 13th, Hudson & Gansevoort Sts., New York, N. Y.

Ertel Engineering Corp., 40 Mill St., Kingston, New York, P. C. C.

N. Y. Estes, E. B. & Sons, Inc., 155 E. 44th St., New York.

N. V. Eureka Mfg. Co. Inc., 144 W. Britannia St., Taunton, Mass.
Eureka Paper Box Corp., 811 W. Evergreen Ave., Chicago, Ill.
Eureka Specialty Printing Co., 530 Electric St., Scratton, Pa.
Ever Ready Label Corp., 145 E. 25th St., New York, N. Y.

N. Y.

Everett Transparent Container Co., 251 Third
Ave., New York, N. Y.

Exact Weight Scale Co., The, 223 W. Fifth Ave.,
Columbus, Ohio

Ex-Cell-O Corp., Pure-Pak Div., 1200 Oakmond
Blvd., Detroit, Mich.

Excelsior Paper Specialties Co., 640 W. 57th St.,
New York, N. Y.

Fabart Instrument Co., 4740 N. Clark St., Chicago, Fairchild, E. E. Corp., 367 Orchard St., Rochester,

Fales Chemical Co. Inc., The, Cornwall Landing, Farrel, Harry H., 6 N. Michigan Ave., Caicago, Ill. Farrington Mfg. Co., Green & Amory Sts., Boston,

Federal Carton Corp., 638 W. 57 St., New York,

Federal Container Co., 56th St. & Paschall Ave., Phila., Pa.
Federal Mills, Bogota, N. J.
Federal Tin Co., Inc., 11 E. Barre St., Baltimore,

Federal Tool Corp., 400-12 N. Leavitt St., Chicago, Ill.

Ill.

Federico, Joseph B., 1116 Roselle Ave., Niagara Falls, N. Y.
Fein's Tin Can Co., Inc., 50th St. & First Ave., Bklyn, N. Y.
Ferguson, J. L. Co., Center & Jasper Sts., Joliet, Ill.

Fibreboard Products, Inc., 710 Russ Bldg., San

Fibreboard Products, Inc., 710 Russ Bldg., San Francisco, Calif.
Fibre Cord Co., 755 E. 134th St., New York, N. Y.
Finck, J. L. Laboratories, The, 1713 K St., N. W.
Washington, D. C.
Findley, F. G. Co., The, 1243 N. 10th St., Milwaukee, Wis.
Finishing Research Laboratories, Inc., 123 N.
Jefferson St., Chicago, Ill.
Firstone Rubber & Latex Products Co., Fall River,
Mass.

Fitchburg Paper Co., 642 River St., Fitchburg, Fitzhugh, William W. Inc., 2nd Ave. & 49th St., Bklyn, N. Y.

Flannery Associates, Graybar Bldg., New York, N. Y. Flashfold Box Corp., Ft. Wayne, Ind. Fleishhacker Paper Box Co., 401 Second St., San Francisco, Calif. Francisco, Calif. Fleisig, H., Inc., 402 Lafayette St., New York, N. Y. Fleming-Potter Co. Inc., 1028 S. Adams St., Peoria,

Fleming & Son Inc., Dallas, Tex.
Flint, Howard Ink Co., 3545 Scotten Ave., Detroit,
Mich.

Mich.
loramics Co., The, Tampa, Fla.
lour City Paper Box Co., 510 Plymouth Ave.,
Minneapolis, Minn.
lower City Specialty Co., 158 Hollenbeck St.
Rochester, N. Y.

olding Boxes, Inc., Manchester, Conn. ood Dispenser Co., The, 117 Spruce St., Hartford,

Food Dispenser Co., Inc., 117 Sprace Con.
Conn.
Food Machinery Corp., Sprague-Sells Div., Hoopeston, Ill.
Food Packaging, Div. of Milprint Inc., 431 W.
Florida, Milwaukee, Wis.
Forbes Lithograph Co., The, P. O. Box 513, Boston,
Mass.
Force, Wm. A. & Co., Inc., 216 Nichols Ave.,
Bklyn, N. Y.
Bklyn, N. Y.
Bklyn, N. Y.
Castleton-on-Hudson, N. Y.

Bklyn, N. Y. Fort Orange Paper Co., Castleton-on-Hudson, N. Y. Fort Wayne Corrugated Paper Co., 2001 E. Pon-tiac St., Fort Wayne, Ind. Foster & Cross, Inc., 105 Lexington Ave., Bklyn, N. Y.

ox, C. J. Co., The, 236 Aborn St., Providence, R. I. Foxon Co., The, 242 W. Park St., Providence, R. I. Frankenberg Bros., 479 S. Ludlow St., Columbus,

Onto Franklin Board & Paper Co., The, Franklin, Ohio Franklin Plastics Div., Robinson Industries Inc., Franklin Plastics Div., Robinson Industries Inc., Franklin, Pa. Freeman, Edna Leslie, 228 E. 45th St., New York, N. V.

N. Y.
Freydberg Bros.-Strauss, Inc., 212 Fifth Ave.,
New York, N. Y.
Friend Box Co., 90 High St., Danvers, Mass.
Frohn, John C., 10 Thatcher St., Boston, Mass.
Frost Box Co., Inc., Pawtucket, R. I.
Fuchs & Lang Mfg. Co., Div. General Printing Ink
Corp., 100 Sixth Ave., New York, N. Y.
Fulton Bag & Cotton Mills, P. O. Box 1726, Atlanta, Ga.

Gaetjens, Berger & Wirth, 35 York St., Bklyn, N. Y. Gair, Robert Co., Inc., 155 E. 44th St., New York, N. Y.

N. Y.
Gallie-King Bag Co., P. O. Box 1191, Houston, Tex.
Gamse Lithographing Co. Inc., 419-421 E. Lombard St., Baltimore, Md.
Gardner-Richardson Co., The, 407 Charles St.,
Middletown, Ohio
Garfield Box Co., 2 Ackerman Ave., Clifton, N. J.
Gates Paper Co. Ltd., The, 964 McGarry St., Los
Angeles, Calif.
Gaylord Container Corp., 111 N. 4th St., St. Louis,
Mo.

Gellman Mfg. Co., Rock Island, Ill. Gemloid Corp., 79-10 Albion Ave., Elmhurst, L. I., N. Y.

N. Y.
General Can Co., 1603 S. Canal St., Chicago, Ill.
General Electric Co., Plastics Dept., 1 Plastics
Ave., Pittsfield, Mass.
General Industries Co., Elyria, Ohio
General Laminating, Inc., 34 W. 27th St., New York
N. V.

N. Y.
General Printing Ink Corp., 100 Sixth Ave., New
York, N. Y.
General Ribbon Mills, Catasauqua, Pa.
George & Sherrard Paper Co., 220 E. 42nd St.,
New York, N. Y.
Gerbereux, Dufft & Kinder, 80 Richards St.,
New York, N. Y.
Gereke-Allen Carton Co., 1701 Chouteau Ave.,
St. Louis, Mo.
Gerrard Co. Inc., The, 2915 W. 47th St., Chicago,
III

III.
Gerth, Ruth, 228 E. 61st St., New York, N. Y.
Gianninoto, Frank, 250 Park Ave., New York, N. Y.
Giles Can Co., 2444 W. 16th St., Chicago, III.
Gits Molding Corp., 4600 W. Huron St., Chicago,
III.

Glass Containers, Inc., 3601 Santa Fe Ave., Los Angeles, Calif. Glass Industries, Inc., 10 W. 33rd St., New York, N. Y.

N. Y. Globe Mfg. Co., 2009 Kinsey St., Phila., Pa. Globe Paper Box Co., 233 W. Huron St., Chicago, Globe Paper Box Mfg. Co., 1227 University Ave., St. Paul, Minn.
Goat, Fred Co., Inc., The, 314 Dean St., Bklyn,
N. Y.

N. Y.
Goldsborough, Francis F., 353 Fifth Ave., New
York, N. Y.
Goodrich, B. F. Co., The, 500 S. Main St., Akron,
Ohio
Goodyear Tire & Rubber Co., The, Pliofilm Div.,
Akron, Ohio
Gorham Co., The, Elmwood P. O., Providence, R. I.
Goss Printing Press Co., 1535 S. Paulina Ave.,
Chicago, Ill.
Grady & Neary Co., 117 W. Harrison St., Chicago,
Ill.

Grafflin Bag Co., 1407 Philpot St., Baltimore, Md. Grammes, L. F. & Sons, Inc., 363 Union St., Allentown, Pa.

Grand-City Container Corp., 622 W. 57th St., New York, N. V

York, N. Y.
Grand Rapids Label Co., Graphic Arts Bldg., 545
Ottawa St., N. W., Grand Rapids, Mich.
Grand Rapids Paper Box Co., 231 Fulton St.,
West, Grand Rapids, Mich.
Grand Sheet Metal Works, 2501 W. 24th St.,
Chicago, Ill.

Grant Paper Box Co., 3000 Liberty Ave., Pitts-burgh, Pa.

burgh, Pa.
Grau, Russell, Norris Bldg., Atlanta, Ga.
Gravure Laboratories, Inc., Box 124, Babylon, N. Y.
Gray Wire Specialty Co., The, 1761 E. 39th St.,
Cleveland, Ohio
Great Lakes Box Co., The, 7275 Wentworth Ave.,
Cleveland, Ohio
Gregory Motors, Inc., 59 E. 34th St., New York,
N. Y.

N. Y.
Griffin, Campbell, Hayes, Walsh, Inc., 50 E. 21st
St., New York, N. Y.
Grigoleit Co., The, 740 E. North St., Decatur, Ill.
Grimley, Frank J., 255 Shipley St., San Francisco,
Calif.

Calif.

Crover, Frederic S., 154 East Ave., Rochester, N. Y.

Guardian Safety Seal Co., 35 E. Wacker Drive,

Chicago, Ill.

Guilford Folding Box Co., The, Haven St. &

Ashland Ave., Baltimore, Md.

Gummed Products Co., The, S. Union St., Troy,

Ohio

Gumpred Trace & Belling Co.

ned Tape & Devices Co., 1318-1320—60th St., vn. N. V. Bklyn, N. Y.
Gump, B. F. Co., 445-450 S. Clinton St., Chicago, Ill.
Gutmann, Ferdinand & Co., 3611—14th Ave., atmann, Ferdinand Bklyn, N. Y. Bklyn, N. Y. Gutterson & Co., Inc., 420 Lexington Ave., New York, N. Y.

Haida Engineering Co., 34-11 Vernon Blvd., Long Island City, N. Y. Hall, Frances Cushing, Westport Mill, Westport, Conn. Halsted, E. S. & Co., Inc., 64 Pearl St., New York,

N. Y. Hamersley Mfg. Co., The, 100 River Drive, Gar-field, N. J.

field, N. J.

Hamilton, J. T. & A. Co., 26th & A.V.R.R., ...
burgh, Pa.

Hampden Glazed Paper & Card Co., Water St.,
Holyoke, Mass.

Hampshire Paper Box Co., Florence, Mass.
Hamkins Container Co., 3044 W. 106th St., Cleveland, Onio

Hardin Bag & Burlap Co., 205 Perdido Bldg., New
Orleans, La.

Orleans, La.

Mastercraft Div., 1401–1417 W.

Orleans, La

Harlich Mfg. Co., Mastercraft Div., 1401–1417 W.
Jackson Blud, Chicago, Ill.
Harris-Seybold-Potter Co., 858 Washington St.,
Dayton, Ohio
Hartford City Paper Co., 15 Park Row, New York,
N. Y.

N. V.
Harvard Specialty Mfg. Corp., 99 Broadway,
Cambridge, Mass.
Hashagen Paper Box Co., 228 First St., N. W.,
Washington, D. C.
Haverlee, Arnold H., 461 Eighth Ave., New York,
N. Y.

N. Y. Hayssen Mfg. Co., 13th St. & St. Clair Ave., She-boygan, Wis. Hazel-Atlas Glass Co., 15th & Jacob Sts., Wheeling, W. Va.

boygan, W.S.

Hazel-Atlas Glass Co., 15th & Jacob Sts., Wheeling, W. Va.

Hazen Paper Co., 208 Race St., Holyoke, Mass.

Heekin Can Co., The. Cincinnati, Ohio

Heimrich, H. H. Inc., 200 Varick St., New York, N. V.

Heller Co., The, 4312 Euclid Ave., Cleveland, Ohio

Hellmuth, Charles Printing Ink Corp., 154 W.

18th St., New York, N. Y.

Helmo, Inc., 1215 W. Fullerton Ave., Chicago, Ill.

Helmold, J. F. & Bro. Inc., 1462 Shakespeare

Ave., Chicago, Ill.

Henle Wax Paper Mfg. Co., Inc., 1428 Longfellow

Ave., New York, N. Y.

Henlopen Mfg. Co., Lewes, Del.

Henscael, C. B. Mfg. Co., 229 W. Mineral St.,

Milwaukee, Wis.

Henry, Ira L. Co., 702 Elm, Watertown, Wis.

Hens & Denson, 129 W. 20th St., New York, N. Y.

Heywood Mfg. Co., 420 N. 3rd St., Minneapolis,

Minn.

Herculle Powder Co. Inc., 931 Market St., Wilming-

Minn.
Heroules Powder Co. Inc., 931 Market St., Wilmington, Del.
Heresite & Chemicals Co., 822 S. 14th St., Manitowoc, Wis.
Hickory Paper Box Co., 341—10th Ave., Hickory,

N. C. High Point Paper Box Co. Inc., Mangum Ave., High Point, N. C. Hill-Hentschel Co., 3928 Clayton Ave., St. Louis,

Hill-Hentschel Co., 3928 Clayton Ave., St. Louis, Mo.
Mo.
Hilton-Davis Co., Langdon Rd. & Penn R.R.,
Cincinnati, Ohio
Hinde & Dauch Paper Co., The, P. O. Box 861,
Sandusky, Ohio
Hinkson Paper Co., Palmer Mass.
Hoague-Sprague Corp., Broad St., Lynn, Mass.

Hodges, Guy W. Inc., 10 E. 40th St., New York,

N. Y.
Hoe, R. & Co., Inc., East River & 138th St., New York, N. Y.
Holed-Tite Packing Corp., Herkimer, N. Y.
Holes & McClellan, 100 Northfield Rd., Bedford, Ohio

Hollingsworth & Whitney Co., 140 Federal, Boston,

Hollingsworth & Whitney Co., 140 Federal, Boston, Mass.
Holliston Mills, Inc., The, Lenox St., Norwood, Mass.
Hollywood Paper Box Corp., 1057 N. La Brea Ave., Hollywood, Calif.
Holyoke Card and Paper Co., 95 Fisk Ave., Springfield, Mass.
Hooper, F. X. Co., Inc., Glenarm, Md.
Horix Mfg. Co., Pittsburgh 4, Pa.
Hornung, Clarence P., 23 W. 47th St., New York, N. Y.
Howe Scale Co., The Rutland Vt.

N. Y.
Howe Scale Co., The, Rutland, Vt.
Howell, F. M. & Co., 79-95 Penn. Ave., Elmira,
N. Y.
Huber, J. M. Inc., 460 W. 34th St., New York,
N. Y.

N. Y.
Hudson, H. L. Co., The, 56 Pearl St., Bklyn, N. Y.
Hudson-Sharp Machine Co., 1201-1207 Main St.,
Green Bay, Wis.
Hulbert Engineering Corp., 903 Clyman St., Watertown, Wis.
Hull, A. E. Pottery Co., The, Crooksville, Ohio
Humitube Mfg. Co., 233 N. Madison, Peoria, Ill.
Hummel & Downing Co., Milwaukee, Wis.
Hummel-Ross Fibre Corp., Hopewell, Va.
Hutchinson Bag Co., Hutchinson, Kan.
Hygienol Co. Inc., 120 W. 42nd St., New York,
N. Y.

Ideal Stencil Machine Co., Ideal Block, Belleville,

III. Ideal Stitcher & Mfg. Co., 100 Fourth St., Racine, Wis.

Wis. Imperial Molded Products Corp., 2925 W. Harrison St., Chicago, Ill. Imperial Paper Box Corp., 252 Newport St., Bklyn, N. Y.

Independent Can Co., 1301 S. Howard St., Balti-more, Md.

Independent Can Co., 1301 S. Howard St., Baltimore, Md.
Indianapolis Paper Container Co., 217 W. 10th St., Indianapolis, Ind.
Indianapolis, Ind.
Industrial Molded Products Co., 2035 Charleston St., Chicago, Ill.
Inland Container Corp., 700 W. Morris St., Indianapolis, Ind.
Imman Mfg. Co. Inc., 41–53 Guy Park Ave., Amsterdam, N. Y.
In-Tag Division of Interchemical Corp., 75 Varick St., New York, N. Y.
International Folding Paper Box Co. Inc., 2029—83rd St. N. Bergen, N. J.
International Mailing Tube & Wrapper Co., 29–05 Review Ave., Long Island City, N. Y.
International Molded Plastics, Inc., 4383 W. 35th St., Cleveland, Ohio
International Paper Box Machine Co., 315 Main St., Nashua, N. H.
International Paper Products, Div. of International Paper Co., 220 E. 42nd St., New York, N. Y.
International Printing Ink Div. of Interchemical Corp., 75 Varick St., New York, N. Y.
Interstate Folding Box Co., The, Verity Parkway, Middletown, Ohio
Interstate Litho. Corp. (See Scandore Paper Box Co.)

J. L. Paper Box Co., North Attleboro, Mass. Jamieson, C. E. & Co., 1962 Trombly, Detroit, Mich.

Jay Advertising Co., Lincoln Highway West, Lancaster, Pa. Jaypaco Co., 405 E. 4th St., New York, N. Y.

Jaypaco Co., 405 E. 4th St., New York, N. Y.
Jeffrey Mfg. Co., The, Columbus, Ohio
Johnson, Chas. Ebey & Co., 10th St. at Lombard, Phila., Pa.
Johnston Paper Co., The, 2060 Reading Rd., Cincinnati, Ohio
Johnston Tin Foil & Metal Co., The, 6106 S. Broadway, St. Louis, Mo.
Jones, E. Willis, 333 N. Michigan Ave., Chicago,
Ill.
Jones, Jesse Paper Rev. Co., 1005. Jones, Jesse Paper Box Co., 1023 Vine St., Phila.,

mes & Laughlin Steel Corp., Jones & Laughlin Bldg., 3rd Ave. & Ross St., Pittsburgh, Pa.

Kalamazoo Paper Box Co., 385-395 S. Pitcher St., Kalamazoo, Mich. Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich. Karasz, Ilonka, Gage Hill, Brewster, N. Y. Kaumagraph Co., 16 E. 34th St., New York, N. Y.

Kay Displays, Inc., 9 E. 40th St., New York, N. Y. Kayton, Robert, Displays, Inc., 127 W. 26th St., New York, N. Y. Keller-Dorian Paper Co., 516 W. 34th St., New York, N. Y.

Keller-Dorian Paper Co., 516 W. 34th St., New York, N. Y. Kelly, E. J. Co., 1807 N. Pitcher St., Kalamazoo, Mich. Kent. Percy Bag Co., Inc., 320 Broadway, New York, N. Y. Kentucky Paper Box Co., 117 N. 6th St., Louis-ville, Ky. Keratol Co., Stamford, Conn. (See Atlas Powder Co. Zapon-Keratol, Div.) Ketcham, Howard, Inc., 607 Fifth Ave., New York, N. Y. Keyes Fibre Co., Waterville, Me. Keystone Bag & Burlap Co., 854 N. Prince St., Lancaster, Pa. Keystone Box Co., 28th & Smallman Sts., Pitts-burgh, Pa. Keystone Cap Co., Columbia, Pa. Kidder Press Co. Inc., Dover, N. H. Kiefer, Karl Machine Co., The, 919 Martin St., Cincinnati, Ohio Kiernan-Hughes Co., Ninth & Brunswick Sts., Jersey City, N. J. Kimble Glass Co., Vineland, N. J. Kimdred, MacLean & Co. Inc., 43-01 22nd St., Long Island City, N. Y. Klein, A. & Co., Inc., 113 W. 117th St., New York, N. Y. Knoche, Lucille, 664 N. Michigan Ave., Chicago,

N. Y. Kline, Leon M. 130 W. Maple St., York, Pa. Knoche, Lucille, 664 N. Michigan Ave., Chicago,

Knoche, Lucille, 664 N. Michigan Ave., Chicago, III.
Knoedler, A. Co., Lancaster, Pa.
Knowlton, M. D. Co., 28 Industrial St., Rochester, N. Y.
Koch, Karl Peter, 156 W. Burton Place, Chicago, III.
Koehl, Wm. Co., The, 1034 Hulbert Ave., Cincinnati, Ohio
Kogan, Belle, 362 Fifth Ave., New York, N. Y.
Kohl & Madden Printing Ink Co., 713 Plymouth Court, Chicago, III.
Koodin, Ben, 18 E. 41st St., New York, N. Y.
Koster, Louis H., 222 E. 40th St., New York, N. Y.
Krause, Richard M. Inc., 52 E. 19th St., New York, N. Y.
Kress, F. J. Box Co., 120 Eighth St., Pittsburgh, Pa. eck Paper Box Co., 1701 W. Superior St., nicago, Ill.

Kroeck Paper Box Co., 1701 W. Superson Chicago, III.
Kuhn & Jacob Moulding & Tool Co., 1203 Southard St., Trenton, N. J.
Kupfer Bros. Paper Co., 145 W. Hubbard St.,
Chicago, III.
Kurz-Kasch Inc., 1417 S. Broadway, Dayton, Ohio

L-A Paper Box Factory, 2615 E. 12th St., Los Angeles, Calif. LaBoiteaux Co. Inc., The, 2985 Madison Rd., Cin-cinnati, Ohio Lakso Co., The, Box 257, Fitchburg, Mass. Lambooy Label & Wrapper Co., 2127–30 Portage St., Kalamazoo, Mich.

Laminating Corp., 1313 W. Randolph St., Chicago, Ill. aminoid Inc., 2125—83rd St., N. Bergen, N. J. Lamson Corp., 1003 Lamson St., N. Bergen, N. J. Landowne, J. Co., The, 561 Grand Ave., Bklyn, N. V.

N. Y. Lanfare Molded Products, 1519 Freeman St., Toledo, Ohio Langston, Samuel M. Co., 1930 S. 6th St., Camden, N. J.

Lansky Die Cutting Co., 194 Greene St., New York, N. V.

York, N. Y.
Lappert, Jack D., 1182 Broadway, New York, N. Y.
Laucks Laboratories, Inc., 911 Western Ave.,
Seattle, Wash.
LaWall and Harrisson, 214 S. 12th St., Phila., Pa.
Lawless Bros. Paper Mills Inc., E. Rochester, N. Y.
Lawson, Jacob Bag Co., 264 Water St., New York,
N. Y.

N. Y.

Lebanon Paper Box Co., Lebanon, Pa.

LeComte & Co., Inc., 147—41st St., Bklyn, N. Y.

Lehmann Printing & Lithographing Co., 400—4th

St., San Francisco, Calli.

Lengsfield Bros., Inc., 1101 Tchoupitoulas St.,

New Orleans, La.

Leominster Paper Box Co., Leominster, Mass.

LePage's, Inc., Gloucester, Mass.

LeVa-A-Lift Co., The, 277 Broadway, New York,

N. Y.

Levey, Fred'k B. Co., Leo.

Level. R. Co., Inc., 41 E. 42nd St., New York, N. Y.
Levey, Fred'k H. Co., Inc., 41 E. 42nd St., New York, N. Y.
Levy, Maurice, 120 West 42nd St., New York, N. Y.
Lewellen Mfg. Co., Columbus, Ind.
Lewis, Ben, 16 E. 52nd St., New York, N. Y.
Libby Glass Mfg. Co., 100 Ash St., Toledo, Ohio
Liberty Can & Sign Co., 303 N. Plum St., Lancaster, Pa.
Liberty Glass Co., Sapulpa, Okla.
Liberty Glass Co., Sapulpa, Okla.
Liberty Paperboard Co., The, Steubenville, Ohio
Lily-Tulip Cup Corp., 122 E. 42nd St., New York,
N. Y.

Lincoln Can Mfg. Corp., 4012 Second Ave., Bklyn, N. V.

Lindley Box & Paper Co., Marion, Ind.
Link-Belt Co., 307 N. Michigan Ave., Chicago, Ill.
Liquid Carbonic Corp., The, 3100 S. Kedzie Ave.,
Chicago, Ill.
Litho Can Corp., 840 Cooper St., Camden, N. J.
Litho Canplers Finishing Co. Inc., 224 Centre St.,
New York, N. Y.
Little, Arthur D. Inc., 30 Charles River Rd., Cambridge, Mass.
Logan Co., 201 Cabel St., Louisville, Ky.
Lone Star Bag & Bagging Co., Houston, Tex.
Lorscheider-Schang Co., Inc., The, 140 North
Fitzhingh St., Rochester, N. Y.
Los Angeles Testing Laboratory, 1300 S. Los
Angeles St., Los Angeles, Calif.
Lowe Paper Co., Ridgefield, N. J.
Lowery & Schwartz, Inc., 20 Vanden St., New
York, N. Y.
Lusteroid Container Co., Inc., 10 Parker Ave., W.,
South Orange, N. J.
Lux, Eugene J., 245 E., 30th St., New York, N. Y.
Lydall & Foulds Paper Co., Manchester, Pa.

Maas & Waldstein Co., 438 Riverside Ave., New-ark. N. J. Mac Sim Bar Paper Co., Otsego, Mich. MacAndrews & Forbes Co., Camden, N. J. Mack Molding Co., Inc., 140 Main St., Wayne, N. J. Mafilt, Howard C., 522 Eleventh St., Des Moines,

Maihitt, Howarte C., 022 bietechnick.

Iowa.

Magill-Weinsheimer Co., 1320—1334 S. Wabash Ave., Chicago, III.

Maine Potato Bag Co., Caribou, Me.

Majestic Metal Specialties Inc., 576 Fifth Ave., New York, N. Y.

Makalot Corp., 262 Washington St., Boston, Mass.

Manchester Board & Paper Co., Richmond, Va.

Manders Co., Inc., The, 34 West 27th St., New York, N. Y.

Washartan Paste & Glue Co., Inc., 425 Greenpoint

York, N. Y.

Manhattan Paste & Glue Co., Inc., 425 Greenpoint
Ave., Bklyn, N. Y.

Mansell, A. Vivlan & Co., Ltd., 230 Fifth Ave.,
New York, N. Y.

Manufacturers Can Co., 3848 W. Lake St., Chicago,
III.

ulfacturers Printing Ink Corp., 1 Main St., Ms

Manufacturers Printing Ink Corp., 1 Main St., Bklyn., N. Y.
Marblette Corp., 37-21—30th St., Long Island
Gity, N. Y.
Marconetti, A. E., Inc., 15 E. 26th St., New York, N. Y.
N. Y.
Markem Machine Co., 50 Emerald St., Keene, N. H.
Marsh, George, 833 Park Square Bldg., Boston,
Mass.
Marsh Stencil Machine Co., 100 Marsh Bldg., Belleville, Ill.

Wartial & Scull, 1220 Broadway, New York, N. Y. Martindell Molding Co., Olden at 6th St., Tren-

Martindell Molding Co., Olden at 6th St., Trenton, N. J.

Marvellum Co., The, Holyoke, Mass.

Maryland Container Co., 1515 Russell St., Baltimore, Md.

Maryland Glass Corp., Morrell Park Sta., Baltimore, Md.

Maryland Paper Box Co., Leadenhall & Ostend Sts., Baltimore, Md.

Mason Box Co., The, Attleboro Falls, Mass.

Mason Can Co., Dexter Rd., Providence, R. I.

Mason Envelope Co., 644 Broadway, New York, N. Y.

Mason. Thes. Co., 175.

N. Y.
Mason, Thos. Co., Inc., Fairfield Ave., Stamford, Conn.
Master Package Corp., The, Owen, Wis.
Mathews Conveyer Co., 166 Tenth St., Ellwood City, Pa.
Matson, Rogers and Markham, 2264 First St., N., Seattle, Wash.
Mat

Pa. Maurer, Sascha A., 480 Lexington Ave., New York, N V

N. Y.
Mayer, Fred A., 5025 Broadway, New York, N. Y.
McCandlish Lithograph Corp., Roberts Ave. &
Stokley St., Phila., Pa.
McClintock Corp., The, 1550 Vernon St., Harrisburg, Pa. McCoy Paper Converters, 3rd & Huntingdon Sts.,

Phila., Pa.

McEwan Bros., Inc., Whippany, N. J.

McGuire, Walter, 227 Franklin St., Bklyn., N. Y.

McLaurin-Jones Co., Brookfield, Mass.

Meier, Joshua, 36 E. John St., New York, N. Y.

Meisel Press Mfg. Co., 944 Dorchester Ave.,

Boston, Mass.

Mele Mfg. Co., 150 W. 22nd St., New York, N. Y.

Melvina Can Co., 59-24—57th Drive, Maspeth,

L. I., N. Y.

Melvina Can Co., 59-24-31... L. I., N. Y. Menasha Products Co., The, Menasha, Wis. Mente & Co., Inc., 12th Fl., Q. & C. Bldg., New Orleans, La. Merit Display Card Co., 120 E. 11th St., New York,

N. Y.
Merrick Scale Mfg. Co., Summer St., Passaic, N. J.
Merrick Transparent Products, 10—09—43rd Ave.,
Long Island City, N. Y.
Meyer, Frank C. Co., 271 Lexington Ave., Bklyn,
N. Y.

Meyer, Jos. H. Bros., 220—25th St., Bklyn, N. Y Meyercord Co., The, 5323 W. Lake, Chicago. Ill,

Michigan Carton Co. Battle Creek, Mich. Michigan Molded Plastics Inc., Dexter, Mich. Michigan Litho. Co., 1 Carlton Ave., Grand Rapids, Mich.

Middlesex Products Corp., 111 Putman Ave., Cam-bridge, Mass. Midland Glue Products Co., 1478–88 Madison Ave., Detroit, Mich.

Mid-States Gummed Paper Co., 2515 S. Damen Ave., Chicago, Ill. Miehle Printing Press Mfg. Co., 14th St. & Damen Ave., Chicago, Ill.

Ave., Chicago, Ill.
Miller Paper Co., 80 Wooster St., New York, N. Y.
Miller Printing Machy, Co., 1117 Reedsdale, Pittsburgh, Pa.
Miller, Walter P. Co., Inc., 452 York Ave., Phila.,

Miller, Waiter F. Co., and Pa.

Pa.

Miller Wrapping & Sealing Machine Co., 18 S.
Clinton St., Caicago, Ill.
Millhiser Bag Co., Richmond, Va.

Mills, Elmer E. Corp., 812 W. Van Buren St.,
Chicago, Ill.

Milarint. Inc., Florida & S. 5th Sts., Milwaukee,

Milprint, Inc., Florida & S. 5th Sts., Milwaukee, Wis.

Wis.

Milton, Geo. A., Can Co., Inc., 131-151 N. 14th St., Bklyn, N. Y.

Milwaukee Industrial Designers, 1671A N. Prospect, Milwaukee, Wis.

Milwaukee, Label & Seal Co., 1027 N. Seventh St., Milwaukee, Wis.

Minkoff & Rosenfield Bros., Inc., 557 DeKalb Ave., Bklyn, N. Y.

Minnesota Mining & Mfg. Co., St. Paul, Minn.

Mitchell-Rand Mfg. Co., 51 Murray St., New York, N. Y.

N. Y.
obile Paper Mill Co., Mobile, Ala.
odel Engraving Corp., 460 W. 34th St., New York,
N. Y.

N. Y.
Modern Containers Inc., 815 S. Hill St., Los Angeles, Calif.
Modern Equipment Corp., Defiance, Ohio
Molded Insulation Co., 335 E. Price St., Phila., Pa.
Mono Service Co., 349 Oraton St., Newark, N. J.
Monsan'o Chemical Co., Plastics Div., Springfield,
Mass.

Monsan'o Chemical Co., Plastics Div., Springfield, Mass.
Morgan Bros., Richmond. Va.
Mor-Gan Laminating & Foliating Co., 30 E. 20th St., New York, N. Y.
Morrell, George Corp., Muskegon Heights, Mich.
Morrill, Geo. H. Co., Div. General Printing Ink Corp., 100 Sixth Ave., New York, N. Y.
Morrie Paper Mills, 135 S. LaSalle St., Chicago, Ill.
Moser Bag & Paper Co., The, 3041-35 E. 35th St., Cleveland, Ohio
Moser Paper Box Co., 4511 N. Euclid Ave., St.
Louis, Mo.
Mosinee Paper Mills Co., Mosinee, Wis.
Motion Displays, Inc., 29 Ryerson St., Bklyn, N. Y.
Muirson Label Co. Inc., 1085 Irving Ave., Bklyn, N. Y.

N. Y.
Mundet Cork Corp., Closure Div., 65 S. Eleventh
St., Bklyn, N. Y.
Munson Bag Co., The, 1384 W. 117th St., Cleveland, Ohio
Murray & Scheiding, 151 E. 38th St., New York,
N. V.

Iyers, J. & P. B., Inc., 26 Exchange Pl., Jersey City, N. J.

N

Nalco, Inc., 116 E. 27th St., New York, N. Y.
Na-Mac Products Corp., 1027 N. Seward St.,
Hollywood, Calif.
Narragansett Coated Paper Corp., P. O. Box 536,
Pawtucket, R. I.
Nash, Ben, 51 Fifth Ave., New York, N. Y.
Nashua Gummed & Coated Paper Co., 44 Franklin
St., Nashua, N. H.
Nashua Package Sealing Co. Inc. (See Nashua
Gummed & Coated Paper Co.)
Natick Box & Board Co., Natick, Mass.
National Adhesives Div. of National Starch Products, Inc., 820 Greenwich St., New York, N. Y.
National Bag Corp., 271 Madison Ave., New York,
N. Y.

National Bag Corp., 271 Madison Ave., New York, N. Y.
National Bread Wrapping Machine Co., 132 Birnie Ave., Springfield, Mass.
National Can Corp., 110 E. 42nd St., New York, N. Y.
National Canners'. Laboratory, 711 Pennsylvania Ave., Pittsburgh, Pa.
National Carbon Co., Inc., 30 E. 42nd St., New York, N. Y.
National Colapsible Tube Co., 362 Carpenter St., Providence, R. I.
National Collapsible Tube Co., 1nc., The, 930 E.
Monument St., Baltimore, Md.
National Container Corp., 30-01 Review Ave., Long Island City, N. Y.
National Folding Box Co., James & Alton Sts., New Haven, Conn.
National Metal Edge Box Co., 340 N. 12th St., Phila., Pa.

National Metal Edge Box Co., 340 N. 12th St., Phila., Pa. National Packaging Machinery Co. (See U. S. Automatic Box Machinery Co. Inc.) National Paper Box Co., 20th St. & Tracy Ave., Kansas City, Mo. National Paper Co., 334 Simpson St., N. E., Atlanta, Ga.

National Plastics Inc., 2330 McCalla Ave., Knoxville Tenn.
National Printing & Engraving Co., 7 S. Dearborn St., Chicago, Ill.
National Process Co., Inc., 75 Varick St., New York, N. Y.
National Seal Corp., 14th Ave. & 37th St., Bklyn., N. Y.

N. Y.
National Starch Products, Inc., National Adhesives
Div., 820 Greenwich St., New York, N. Y.
National Tin Can Mfg. Co., 134 W. Third St., New
York, N. Y.

York, N. Y.
National Transparent Box Co., 48 Hampden St.,
Springfield, Mass.
Naugatuck Chemical Div. of U. S. Rubber Co.,
1230 Sixth Ave., New York, N. Y.
Neahr, M. J. & Co., 1600 S. Dearborn St., Chicago,
III.

son, B. F. Mfg. Co., 401 N. E. Main St., Minne-Nel

Nelson, B. F. Mfg. Co., 401 N. E. Main St., Minneapolis, Minn.

Neostyle Inc., 410 N. Wabash Ave., Chicago, Ill.
Neumann, Robert Co., The, 1910-12 W. Eighth St., Cincinnati, Ohio
Nevins-Church Press, The, 250 Park Ave., New York, N. Y.
Newark Boxboard Co., Newark, N. J.
Newark Paper Box Co., 216 High St., Newark, N. J.
Newark Paraffin & Parchment Paper Co., 50 Jelliff Ave., Newark, N. J.
New Can Co., 1nc., The, 200 Commercial St., Malden, Mass.
New England Box Co., 173 Main St., Greenfield.

Maiden, Mass. New England Box Co., 173 Main St., Greenfield. Mass.

New England Box Co., 175 Main St., Greenheid.

Mass.

New England Card & Paper Co., Inc., 10-30 Hanover St., Springfield, Mass.

New England Collapsible Tube Co., 3132 So. Canal
St., Chicago, Ill.

New Haven Pulp & Board Co., New Haven, Conn.

New Jersey Machine Corp., 1616 Willow Ave.,

Hoboken, N. J.

New York Laminating Co., 60 Woolsey St., Irvington, N. J.

New York Laminating Co., 60 Woolsey St., Irvington, N. J.

New York Testing Laboratories, 80 Washington
St., New York, N. Y.

Niagara Insul-Bake Specialty Co. Inc., 483-493

Delaware Ave., Albany, N. Y.

Niagara Lithograph Co., 1050 Niagara St., Buffalo,
N. Y.

Nickelson, John, 155-17, Sanford Ave. Flushing

Nickelson, John, 155-17 Sanford Ave., Flushing, N. V.

N. Y.
Nicoll & Co., 450 Fifth St., San Francisco, Calif.
Nicon Nitration Works. Nixon, N. J.
Noon Bag Co., 34 N. W. 1st Ave., Portland, Ore
Northern Industrial Chemical Co., 7 Elkins St.,
So. Boston, Mass.
Northwest Testing Laboratories, 2nd Ave. & James
St., Seattle, Wash.
Norton Laboratories Inc., 520 Mill St., Lockport,
N. Y.

Oberly & Newell Lithograph Corp., 545 Pearl St., New York, N. Y.
Offset Gravure Corp., 35-37—36th St., Long Island City, N. Y.
Ohio Boxboard Co., The, Rittman, Ohio
Old Dominion Box Co., 528 Turner Ave., Charlotte, N. C.
Olive Can Co., 450 N. Leavitt St., Chicago, Ill.
Oliver Machinery Co., 1006 Coldbrook St., N. E.,
Grand Rapids, Mich.
Oneida Paper Products, Inc., 601 W. 26th St., New York, N. Y.
O'Neil, William, 50 Rockefeller Plaza, New York, N. Y.
Ontonagon Fibre Corp. Ontonagon Mich.

Ontonagon Fibre Corp., Ontonagon, Mich. Oris Mfg. Co., Inc., Jackson St., Thomaston, Conn.

Orns. Mik. Co., Hie., Jacobartories, Rives-Strong Bldg., Los Angeles, Calif.
Ottawa River Paper Co., The, Matzinger Rd., Toledo, Ohio
Outserts Inc., 11 W. 42nd St., New York, N. Y.
Owens-Illinois Can Co., Ohio Bldg., Toledo, Ohio
Owens-Illinois Pacific Coast Co., 1855 Folsom St.,
San Francisco, Calif.

Pacific Can Corp., 290 Division St., San Francisco,

Pacific Can Corp., 230 Division Sci., 2264 First St., Calif., Pacific Coast Testing Laboratory, 2264 First St., N., Seattle, Wash. Pacific Diamond H Bag Co., 315 Main St., San Francisco, Calif. Pacific Label Co., 407 E. Pico, Los Angeles, Calif. Pacific Printing Ink Co., 416 Jackson St., San Fran-cisco, Calif. Package Machinery Co., 132 Birnie Ave., Spring-

cisco, Cain.
ackage Machinery Co., 132 Bunne
field, Mass.
aisley Products Inc., 1770 Canalport Ave., Chi-Reig, Mass.
Paisley Products Inc., 1770 Canaipost
cago. III.
Palm, Fechteler & Co., 220 W. 42nd St., New York,
N. Y.
Accident Co., Inc., 203 E. 18th St., New

N. Y.
Paper Affiliates Co., Inc., 203 E. 18th St., New
York, N. Y.
Paper City Mfg. Co. Inc., 624 Hampden St., Holyoke, Mass.
Paper Package Co., 802 S. Delaware St., Indianapolis, Ind.

Paramount Paper Products Co. Inc., 1601 Glen-wood Ave., Phila., Pa. Parfait Powder Puff Co., 1500 N. Ogden Ave., Chicago, Ill.

Parzinger, Tommi, 310 E. 55th St., New York,

Paslode Co., 2600 N. Western, Chicago, Ill. Paterson Parchment Paper Co., Bristol, Pa.
Pauli, Karl Corp., 454 Broome St., New York,
N. Y.

Pedersen, H. Mfg. Co., 723 Crocker St., Los Angeles, Calif. Peerless Molded Plastics, 410 Hamilton St., Toledo, Ohio

Peerless Products Mfg. Co., 3338 Joy Rd., Detroit, Mich. Peerless Roll Leaf Co., Inc., 4511 New York Ave., Union City, N. J. Peerless Tube Co., 58-76 Locust Ave., Bloomfield, N. J.

Pejepscot Paper Co., 420 Lexington Ave., New York, N. Y.

York, N. Y.

Pennsylvania Glass Products Co., 428–432 N. Craig St., Pittsburgh, Pa.

Perfect Finishing Co., Inc., 200 Varick St., New York, N. Y.

Peters Machinery Co., 4700 Ravenswood Ave., Chicago, Ill.

Peterson Bros., 165 N. Elizabeth St., Chicago, Ill.

Pharmacy Paper Box Co., 3401 W. Division St., Chicago, Ill.

Phelps Can Co., Fulton & Eagle St., Baltimore, Md.

Phenix Associates, 270 Lafayette St., New York, N. Y.

N. Y. Philadelphia Can Co., 225 New St., Phila., Pa. Philadelphia Carpenter Container Co., Inc., 1823 E. Venango St., Phila., Pa. Philadelphia Quartz Co., 126 S. Third St., Phila., Pa. Phoenix Metal Cap Co., 2444 W. 16th St., Chicago, III.

III.
Pictorial Paper Package Corp., Aurora, III.
Pilliod Cabinet Co., The, Swanton, Ohio
Pitkin, Lucius, Inc., 47 Fulton St., New York, N. Y.
Pittsburgh Testing Laboratory, Stevenson St. at
Locust, Pittsburgh, Pa.
Plaskon Co. Inc., 2112-24 Sylvan Ave., Toledo,

Ohio Plastic & Die Cast Products Corp., 1010 E. 62nd

Plastic & Die Cast Products Corp., 1010 E. 62nd St., Los Angeles, Calif. Plastic Inlays Inc., Summit, N. J. Plastic Molding Corp., Sandy Hook, Corn. Plastic Turning Co., Inc., Leominster, Mass. Plastics Tinishing Corp., 160 John St., Bklyn, N. Y. Plastics, Inc., Bradley Beach, N. J. Plasting, Inc., P. O. Box 628, Attleboro, Mass. Platt Corp., Key Highway & Boyle Sts., Baltimore, Md.

Md.
Plumly, Eugene K. Co., 1325 Federal St., Phila., Pa.
Plumly, Geo. W. Co., 417 N. Eighth St., Phila., Pa.
Pneumatic Scale Corp., Ltd., 77 Newport Ave.,
North Quincy, Mass.
Pohlig Bros., 2411 E. Franklin St., Richmond, Va.
Pollock Paper & Box Co., Dallas, Tex.
Pope & Gray, Inc., 95 Morton St., New York, N. Y.
Port Huron Sulphite & Paper Co., Ft. Washington
Ave., Port Huron, Mich.
Post & Johnson, Inc., 71 Church St., Hartford,
Conn.
Potdevin Machine Co., 1207—38th St., Bklyn,
N. Y.
Prentiss, George W. & Co., 439 Dwight & Helper

George W. & Co., 439 Dwight St., Holy-

oke, Mass.

Prescott, J. L. Co., Passaic, N. I.

Price, M. B. Associates, 3301 Empire State Bldg.,

New York, N. Y.

Print-A-Tube Co., 44 Lexington Ave., Passaic,

N. J.

Print-A-Tube Co., 44 Lexington Ave., Passaic, N. J.
N. J.
Printloid Inc., 93 Mercer St., New York, N. Y.
Progress Lithographing Co., The, Reading, Cincinnati, Ohio
Pulp Reproduction Co., 3000 W. Clarke St., Milwaukee, Wis.
Purepac Corp., 511 E. 72nd St., New York, N. Y.
Pyrotex Leather Co., 287 Whitney St., Leominster,
Mass.
Mass.
Benduct. 181 S. St. Louis Ave.

Mass.

Pyroxylin Products Inc., 4851 S. St. Louis Ave.,
Chicago, Ill.

Q

Quality Park Box Co., 450 N. Syndicate St., St. Paul, Minn. Queen City Paper Co., The, Akron, Ohio Quinn, Don L. Co., 609 N. LaSalle St., Chicago, Ill.

R

R. C. Can Co., 101 Chambers St., St. Louis, Mo. Racquette River Paper Co., The, Potsdam, N. Y. Randolph Paper Box Co., 1313 E. Grace St., Rich-mond, Va.

mond, Va.
Rapids Standard Co., Inc., 535 Bond Ave., N. W.,
Grand Rapids, Mich.
Rathbun Molding Corp., 290 Rochester St., Salamanca, N. Y.
Read, Robert E. Inc., Dexter, N. Y.
Reto Molded Products, Inc., Appleton & B.&O.R.R., Cincinnati, Ohio

Redington, F. B. Co., 108 S. Sangamon St., Chi-cago, Ill. Reed Container Sales Corp., 522 Fifth Ave., New York, N. Y.

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23

York, N. Y. Reeves Pulley Co., Columbus, Ind. Reilly Tar & Chemical Corp., Merchants Bank Bidg., Indianapolis, Ind. Remier Co., Ltd., 2101 Bryant St., San Francisco.

Remler Co., Ltd., 2101 Bryant co., Calif.
Calif.
Republic Paperboard Co., The, 3347 Madison Rd.,
Cincinnati, Ohio
Republic Bldg, Cleveland,

Ohio Resina Automatic Machinery Co., Inc., 125 Wol-cott St., Bklyn, N. Y. Ressinger, Paul, 8 S. Michigan Ave., Chicago, Ill. Rexford Paper Co., 1715 W. Canal St., Milwaukee, Wie

Wis.
Reyburn Mfg. Co., Inc., The, Allegheny Ave. at 32nd St., Pnila., Pa.
Reynolds Metals Co., Federal Reserve Bank Bldg., Richmond, Va.
Reynolds Spring Co., Molded Plastics Div., Cambridge, Ohio
Rhinelander Paper Co., Rhinelander, Wis.
Richard Machine Co., 31 S. Place, Battle Creek, Mich.

Richardson Co., The, Melrose Park, Chicago, Ill. Richardson Taylor-Globe Corp., 4501 W. Mitchell Ave., Cincinnati, Ohio Riegel Paper Corp., 342 Madison Ave., New York, N. Y.

N. Y.
Rinkle Krinkle Paper Co., 326 A St., Boston, Mass.
Rinkle Krinkle Paper Co., 326 A St., Boston, Mass.
Ritchie, W. C. & Co., 8801 Baltimore Ave., Chicago, Ill.
Roberts, Lewis, Inc., 72 Union St., Newark, N. J.
Robertson Steel & Iron Co., Springfield, Ohio
Robinson, A. E. & Co., 605 W. Washington St.,
Chicago, Ill.
Robinson Clay Product Co., 101 Park Ave., New
York, N. Y. & Label Co., 160 W. 31th St. New

York, N. Y.

Robinson Tag & Label Co., 460 W. 34th St., New
York, N. Y. Rochester Folding Box Co., P. O. Box 1012, Roches-

ter, N. Y.
Rock City Paper Box Co., Inc., 12th Ave. & Harrison St., Nashville, Tenn.
Rode & Brand, 200 William St., New York, N. Y.
Rogers, Edward H. Inc., 292 Avenue B, New York, N. Y.

& Haas Co. Inc., 222 W. Washington Sq.,

Rossotti Lithographing Co. Inc., 222 W. Washington Sq., Rossotti Lithographing Co. Inc., N. Bergen, N. I. Rotogravure Div., General Printing Ink Corp., 100 Sixth Ave., New York, N. Y. Rotogravure Engineering Co., 299 Marginal St., E. Boston, Mass. Rowell, E. N. Co., Inc., Batavia, N. Y. Royal Paper Corp., 210 Eleventh Ave., New York, N. Y.

N. Y. Royal, Thomas M. & Co., 5800 N. Seventh St., Phila., Pa. Rubin, Jos. & Sons, Inc., 35 Meserole Ave., Bklyn, N. Y.

ckelshaus & Co., Inc., 545 Fifth Ave., New York, Rudnick, A. & A. Inc., 354 W. 13th St., New York, N. Y. N. Y. Rutherford Machinery Co., Div. General Printing Ink Corp., 100 Sixth Ave., New York, N. Y.

Safeway Products Corp., 34 Union Square, New York, N. Y. St. Louis Sticker Co., 1906 Pine St., St. Louis, Mo. St. Regis Paper Co., 230 Park Ave., New York,

N. Y.
Sakier, George, 9 E. 57th St., New York, N. Y.
Salisbury Mfg. Co., Box 1523, Providence, R. I.
Salwen, Joe, Paper Co., 405 E. 4th St., New York,
N. Y.

N. Y.
Sample-Durick Co., Foot of Myrtle St., Indian
Orchard, Mass.
Sanderson Products Inc., 48 W. 48th St., New
York, N. Y. Saranac Machine Co., 376 W. Main, Benton Harbor,

Mich. Scandia Mfg. Co., N. Arlington, N. J. Scandore Paper Box Co., Steuben St. & Park Ave., Bklyn., N. Y.

Scandore Paper Dox Co., Bklyn., N. Y.
Scheele, Edwin H., 419—4th Ave., New York, N. Y.
Schleicher, F. J. Paper Box Co., 1811 Chouteau St.,
St. Louis, Mo.
Schmeer's Paper Box Co., Inc., 204 Herald Place,
Syracuse, N. Y. Syracuse, N. Y. Schmidt & Ault Paper, 423 King's Mill Rd., York, Pa.

Sch midt, Henry & Bro., Inc., 328 Vine St., Phila., Schmidt Lithograph Co., 461—2nd St., San Fran-

cisco, Calif.
Schmidt Bros. Co., 912 Brown St., Phila., Pa.
Schneider Bros. Co., 912 Brown St., Phila., Pa.
Schneider Bros. Co., 912 Brown St., Phila., Pa.
Schoettle, Edwin J. Co., 533 N. 11th St., Phila., Pa.
Schultz Folding Box Co., Eleventh & Pestalozzi,
St. Louis, Mo.
Schulz, A. Geo. Co., 433 W. Clybourn St., Milwaukee, Wis.
Schunak, C. E. Inc., 470 Center St., Meriden,
Conn.

Schurmann, F. A. Inc., 449 Troutman St., Bklyn,

N. E. Schusterman, William V., 191 B. Bklyn, N. Y. Schutz, Thom. A. Co., 201 N. Wells St., Chicago, Ill.

III.
Schwarm & Jacobus Co., 1216 Jackson St., Cincinnati, Ohio
Schwartz, H. L. & Sons Mfg. Co., 4th & Park St., Benton Harbor, Mich.
Scientific Filter Co., 4 Franklin Square, New York, N. V.

Scott & McDonald Inc., 45 Williams St., Everett,

Mass.
Scovill Mfg. Co., 99 Mill St., Waterbury, Conn.
Seal, Inc., Shelton, Conn.
Seaman Box Co., Inc., 29 Ninth Ave., New York,
N. Y.
Sears. Marie Lee

Merle Inc., Danville, Ill. Tube & Box Co., 170 Thomas St., Newark,

Sefton Fibre Can Co., 3275 Big Bend Blvd., St. Louis, Mo. Self-Locking Carton Co., 589 E. Illinois St., Chicago, Ill.

Service Paper Box Co., 309 N. 3rd St., St. Louis,

Sexton Can Co., Inc., 31 Cross St., Everett, Mass. Seymour Products Co., The, Seymour, Conn. Shampain, Citron, Clark, Inc., 43 York St., Bklyn, N. Y.

Shaw Insulator Co., 150 Coit St., Irvington, N. I. Shawmut Waxed Paper Co., Holliston, Mass. Shaw Paper Box Co., Charles St., Meriden, Conn. Shaw Paper Box Co., 37 Sabin St., Pawtucket, R. I. Shawprint, Inc., Lowell, Mass. Shellmar Products Co., Mt. Vernon, Ohio

Sherman Paper Products Corp., 156 Oak St., Newton Upper Palls, Mass.
Shomer-Majestic Box Corp., 510 Sixth Ave., New York, N. Y. Shoup-Owens, Inc., 1100 Adams St., Hoboken, N. J.

Shuttleworth Carton Co., Inc., 474 W. Broadway, New York, N. Y. Siebold, J. H. & G. B. Inc., 47 Watts St., New York,

Siegel, A. L. Co. Co., Inc., 274 Lafayette St., Newark, N. I.

Newark, N. J.
Signode Steel Strapping Co., 2600 N. Western Ave., Chicago, Ill.
Sillocks-Miller Co., The, 10 Parker Ave., W., South Orange, N. J.
Simco Co., The, 4929 York Rd., Phila., Pa.
Simplex Paper Box Corp., Janet Ave., Lancaster, Pa.
Simplex Wrapping Machine Co., 615 2374 Ave., Oakland, Calif.

nclair & Carroll Co., 591 Eleventh Ave., New York, N. Y.

Sinclair & Valentine Co., 611 W. 129th St., New York, N. Y.

Single Service Containers, Inc., 88 Gerrish Ave., Chelsea, Mass. Sinko Tool & Mfg. Co., 351 N. Crawford Ave., Chicago, Ill.

Sisalkraft Co., 205 W. Wacker Drive, Chicago, Ill. Sleight Metallic Ink Co., 538 N. Third St., Phila.,

Steight Metallic Ink Co. of Ill., 717 W. Congress St., Chicago, Ill. Smeallie & Voorhees, Inc., Amsterdam, N. Y. Smith-Emery Co., 920 Santee St., Los Angeles,

Smith-Emory & Co., 651 Howard St., San Francisco, Calif.

cisco, Calif.

Smith-Lustig Paper Box Mfg. Co., The, 2165 E.

31st St., Cleveland, Ohio

Smith, S. K. Co., The, 2857 N. Western Ave.,

Chicago, Ill.

Smith & Winchester Mfg. Co., The, S. Windham,

Ohio.

Ohio Smithe, F. L. Machine Co. Inc., 645 W. 44th St., New York, N. Y. Snyder, Geo H. Inc., 3631 N. Smedley St., Phila., Pa.

benite, Inc., 1344 W. Sample St., South Bend, Ind.

Ind.
Sonoco Products Co., Garwood, N. J.
Southern Kraft Div., International Paper Co., 220
E. 42nd St., New York, N. Y.
Southern States Bag Co., Jacksonville, Fla.
Specialty Paper Box Co., 255 McKibben St., Bklyn,
N. Y.

N. Y.
Specialty Papers Co., The, 802 Miami Chapel Rd.,
Dayton, Ohio
Speedway Mfg. Co., 1834 S. 52nd Ave., Cicero, Ill.
Springfield Coated Paper Corp., 9th & Bailey Sts.,
Camden, N. J.
Sprosty, Dan A. Bag Co., 900 S. Lakewood Ave.,
Baltimore, Md.

Spuehler, Ernst A., 540 N. Michigan Ave., Chicago,

Standard Can Co., 2655 W. Van Buren St., Chicago, Ill. Stano dard Conveyor Co., 315 N. W. 2nd, N. St. Paul,

Standard-Knapp Corp., Portland, Conn.

Standard Molding Co., Baltimore, Md.
Standard Paper Box Corp., 3837 S. Broadway Place,
Los Angeles, Calif.
Standard Products Co., The, Thermo-Plastics Div.,
505 Boulevard Bldg., Detroit, Mich.
Standard Specialty & Tube Co., Lower Penn Ave.,
New Brighton, Pa.
Stanley Works, The, Lake St., New Britain, Conn.
Star Case Co., The, 76 Madison Ave., New York,
N, Y.

N. Y.
Stark Bros. Ribbon Corp., 352 Fourth Ave., New
York, N. Y.
Staude, E. G. Mfg. Co., 2675 University Ave., St.
Paul, Minn.
Stecher-Traung Lithograph Corp., 274 N. Goodman
St., Rochester, N. Y.; 600 Battery St., San Francisco, Calif.
Stecker Paper Box Co., 1420 W. 4th St., Detroit,
Mich.

Mich.
Steel & Tin Products Co., Inc., President & Faun Sts., Baltimore, Md.
Stein, A. & Co., Inc., 1143 W. Congress St., Chicago, Stein, Hall Mfg. Co., 2841 S. Ashland Ave., Chi-

Stein, Hall Allg. Co., 2011 Stengaard, W. L. & Associates, 346 N. Justine St., Chicago, Ill.
Stengaard, W. L. & Associates, 346 N. Justine St., Chicago, Ill.
Sterling Bag Co., 11 Green Lane, Bklyn, N. Y.
Sterling Injection Molding Inc., 277 Military Rd.,
Buffalo, N. Y.

Sterling Bag Co., 1 Co., 1 Sterling Bag Co., 1 Co., 1 Sterling Injection Molding Inc., 277 Military Kd., Buffalo, N. Y.
Sterling Plastics Co., 1140 Commerce Ave., Union, N. J.
Sterling Seal Co., Erie, Pa.
Sterling-Wasser Box Co., 221 W. 7th Ave., Homestead, Pa.
Stevens-Nelson Paper Corp., The, 109 E. 31st St., New York, N. Y.
Stevens & Thompson Paper Co., Greenwich, N. Y.
Stevens & Thompson Paper Co., Greenwich, N. Y.

Stevens & Thompson Paper Co., Greenwich, N. Y. Stiles, H. A. & Co., 174 Portland St., Boston, Mass. Stokes, F. J. Machine Co., 5990 Tabor Rd., Phila., Pa.

ces, Joseph Rubber Co., Taylor St., Trenton, N. J. Stokes & Smith Co., Frankford, Phila., Pa. Stott, R. Doulton, 509 Madison Ave., New York, N. Y.

N. Y.
Strange, John Paper Co., Menasha, Wis.
Strobridge Lithographing Co., The, Cincinnati,
(Norwood), Ohio
Strong, Cobb & Co., Inc., Lisbon Rd. & Evins Ave.,
Cleveland, Ohio
Strouse, Adler Co., The, 78 Olive St., New Haven,

Strouse, Adler Co., The, 18 Olive St., New Haven, Conn.

Stuber & Kuck Co., 2600 S. Adams St., Peoria, Ill. Sun Chemical & Color Co. Div., General Printing Ink Corp., 309 Sussex St., Harrison, N. I.

Sun Tube Corp., 181 Long Ave., Hillside, N. J.

Superior Can Co., Inc., 90 Varick Ave., Bklyn, N. Y.

Superior Folding Box Co., 4170 Geraldine Ave., St. Louis, Mo.

Superior Plastic Co., 643 N. Kedzie Ave., Chicago, Ill.

ill.
Superior Printing Ink Co., 295 Lafayette St., New York, N. Y.
Super-Seal Container Corp., 401 Southern Bldg., Washington, D. C.
Sutherland Paper Co., 243 E. Patterson St., Kalamazoo, Mich.
Swan Metallic Cap Co., 108 N. Jefferson St., Chicago, Ill.

cago, Ill. Sweetnam, Geo. H. Inc., 286 Portland St., Cam-bridge, Mass. Swibold, Duane, 1006 Mohawk, Royal Oak, Mich. Swift, G. W. Jr. Inc., Trenton Fike, Bordentowa, Geo. H. Inc., 286 Portland St., Cam-

N. J. Swindell Bros., Bayard & Russell Sts., Baltimore, Md. Md. Sylvania Industrial Corp., 122 E. 42nd St., New York, N. Y. Synthetic Molded Products Inc., Tower Hill Rd., Wakfelid, R. I. Syntron Co., 251 Lexington Ave., Homer City, Pa.

Taber Instrument Co., 111 Goundry St., N. Tonawanda, N. Y.

Tablet & Ticket Co., The, 1021 W. Adams St., Chicago, Ill.

Tamm & Co., 66-68 Duane St., New York, N. Y.

Tarpey, Thomas, 1017 Nelson Ave., Bronx, N. Y.

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Tech-Art Plastics Co., 41-01—36th Ave., Long Island City, N. Y.

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Tennessee Paper Mills, Chattanooga, Tenn.

Tension Envelope Corp., 345 Hudson St., New York, N. Y.

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Texas Paper Box Mfg. Co., 3720 LaFrance St., Dallas, Tex.

Dallas, Tex.

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Thelander, Clement J., 646 N. Michigan Ave.,
Chicago, Ill.

Thilmany Pulp & Paper Co., Kaukauna, Wis.
Thoma Paper Box Co., Inc., 650 Clinton St.,
Buffalo, N. Y.

Thompson Can Co., 1304 S. Austin St., Dallas,

Tex.
Thwing-Albert Instrument Co., 3339 Lancaster
Ave., Phila., Pa.
Toledo Paper Box Co., 1116-24 True St., Toledo,

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Toledo Scale Co., 1025 Telegraph Rd., Toledo, Ohio
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Tower Envelope Co., 487 Broadway, New York,

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N. Y. Weigh Right Automatic Scale Co., 404 Grant Ave., Joliet, Ill.

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weiden, W. Archibaid, 101 Park Ave., New York, N. Y. Wells Mfg, Co., 220 Ninth St., San Francisco, Calif. Welwood, John C. Corp., 120 West 42nd St., New York, N. Y. W-E-R Ribbon Corp., 440 Fourth Ave., New York, N. Y.

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Hoboken, N. I.

White Metal Manufacturing Co., 1012 Grand St., Hoboken, N. J. Wiener Bros. Inc., 692 Broadway, New York, N. Y. Wilco Co., 6800 McKinley Ave., Los Angeles, Calif. Wilkiata Folding Box Co., Kearney, N. J. Wilkins Paper Box Co., Inc., 65 Beverly St. Boston Mass.

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N. Y.
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Williams, Charles W. & Co., Inc., 303 Lafayette
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Williams Sealing Corp., 1226 E. Garfield, Decatur,

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Wyomissing Glazed Paper Co., Reading, Pa.

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Zenith Plastics Inc., 1011 Power Ave., Cleveland, Ohio Zipprodt, Inc., 6 N. Michigan Ave., Chicago, Ill. Zumbiel, C. W. Co., 2339 Harris Ave., Cincinnati (Norwood), Ohio

Several important changes will be noted in this year's complete revision of this Directory Section. Every effort has been made to simplify titles and listings. Subtitles have been used extensively to direct packagers more easily to the listing desired. The directories have been completely checked and corrected for accuracy in name, address and product.

As usual, we ask that we be informed of any omission or mistake so that such corrections may be made in subsequent issues.

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New York, N. Y.

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n S. Cole, General Manag M. A. Olsen Perry H. Backstrom James M. Connors Robert L. Davidson Lloyd B. Chappell E. Gordon, Production F. Posner, Circulation Walter S. Ross, Promotion

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HOW TO USE THIS BOOK,

This is the complete handbook of packaging. It has every kind of basic information you need to know. It will tell you about every type of package used in modern commerce. It has articles—and exclusive properties charts—of all the materials used in packaging. It has sections on packaging and production machinery—all types, their care, location in the plant and other production considerations. It has a special section on packaging design, covering the new trend toward simplification and containing a chapter on color photography. There is a special section on Packaging Law.

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THE SECTIONS APPEAR IN THE FOLLOWING ORDER

- 1 Design Principles
- 2 Packaging Law
- 3 Paper Containers
- 4 Wood, Leatherette and Pottery
- 5 Bags
- 6 Rigid Plastic Sheeting

- 7 Wrappings
- 8 Metal Containers
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- 11 Displays
- 12 Labels, Seals, Tags

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- 14 Adhesives
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In the back of this book on pp. 637–638, you will find an alphabetical, cross-indexed list of all the articles. As you desire to read of a certain subject, this index will give you a quick reference to the pages on which the article appears.

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After you have found the information about a package, material or piece of equipment by reading the desired articles, and you wish to get in touch with the manufacturer, use the Directories at the end of the book. Buyers' Directory starts page 592: Classified according to product, tells you who makes each item. Names are listed alphabetically under each classification. Trade Name Directory starts page 613: All trade names used in packaging industries listed alphabetically, with description of each product and manufacturers' names. Alphabetical Index of Manufacturers: Manufacturers' names and addresses, listed alphabetically. This list supplements the Buyers' Directory which does not give the addresses.

HERE'S HOW

Supposing you wanted to get information on multiwall paper bags. You would turn to page 637 and look the article up under "Bags, Heavy Duty Multiwall Paper." This will tell you to turn to page 138. You would then turn to page 138 and read the article. After this, you might be interested in getting in touch with manufacturers of these bags. You would then turn to the Buyers' Directory, on page 593, under the general heading "Bags" and the subheading "Multiwall Heavy Duty" and note 7 companies listed (advertisers in bold face type).

To get the addresses of these 7 companies, you turn to the alphabetical index of manufacturers, on page 628, and look up the companies' names. Next to each will be found the correct address.

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